Bang&Olufsen

Beovision LX5000/6000

Type 336X/334X

Beovision MX4000/6000

Type 332X/330X

Accessories

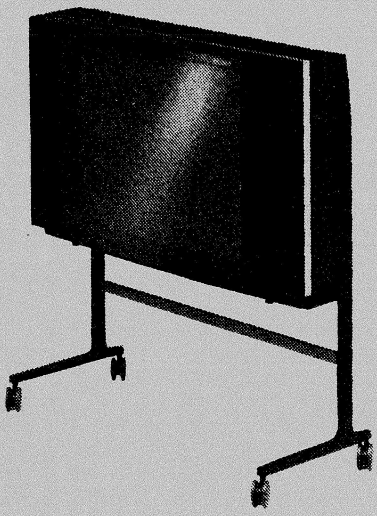
Nicam
Picture-in-Picture
Transposer

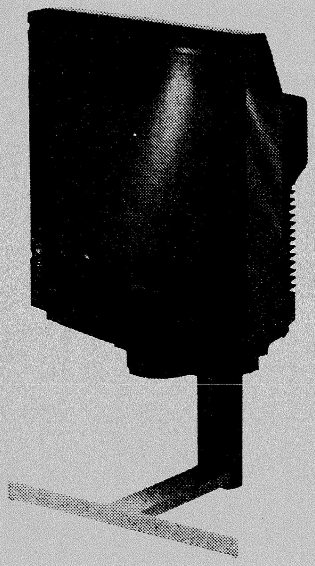
Stands LX

TB 4108
ST 4117
MS 4106
MB 4101

Stands MX

TB 4110
ST 4109
MS 4107
MS 4116
MB 4102
MB 4105
WB 4114
MW 4115





SERVICE MANUAL

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Picture tube
Last error
Display
I²C bus error
Fault-finding in AFC circuits
Fault-finding in switch mode power supply
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Beolink 1000 MK II and MK III
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Bang&Olufsen

SURVEY OF MODULES

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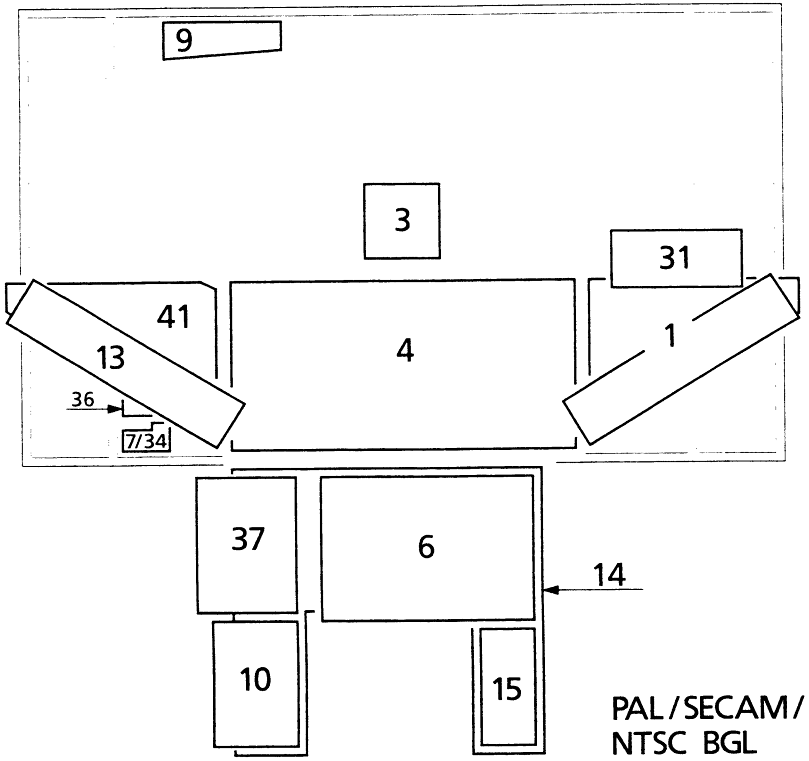

PAL/SECAM/
NTSC BGL

SURVEY OF MODULES

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4	Power Supply & Deflection	diagram I	page 2-23
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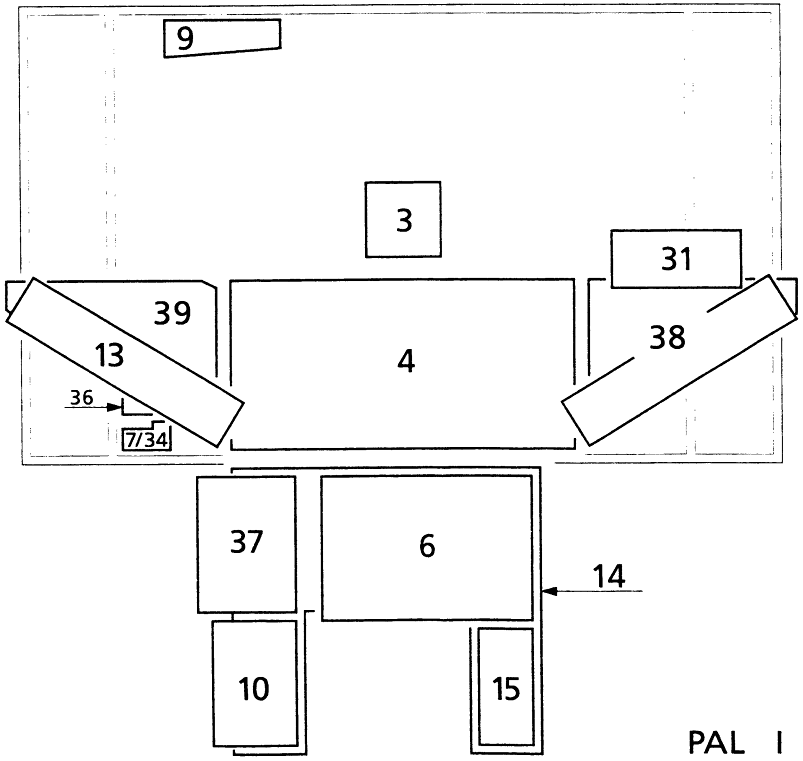
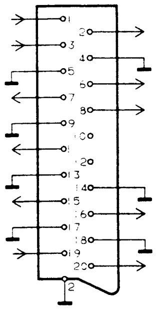


PAL I

TECHNICAL SPECIFICATIONS	**Beovision MX4000-MX6000-LX5000-LX6000**
CTV system	* See type survey
Picture tube (Visual picture)	LX5000 63 cm - 25" (59 cm - 23")
	LX6000 70 cm - 28" (66 cm - 26")
	MX4000 55 cm - 21" (51 cm - 20")
	MX6000 70 cm - 28" (66 cm - 26")
Picture tube system	Flat square, Black Line, Black matrix, In-Line 110 degrees
Cabinets	LX: Rosewood - White - Grey - Black - White Line -
	Black Line
	MX: Red - White - Black - Blue - Grey
Operation	Beolink 1000, one-way
	Beolink 5000, two-way
	Beolink 7000, two-way
TV tuner range	46-855 MHz: VHF, S, Hyper, UHF channels
	*(System I 470-855 MHz: UHF channels)
No. of TV programmes	59 (+5 for local rooms)
Station identification	Station naming/program list
Satellite	*Prepared for Beosat LM
No. of satellite programmes	>99
Signal/noise level	>35 dB/1Vpp and antenna signal >1 mV
Crosstalk between sources	>45 dB/5 MHz
Teletext	FLOF, 6-alphabet
Teletext memory	4 x 59 page nos.
Sound system	*Nicam + A2 stereo decoder + A2 dual language
Speaker system	2 x Bass reflex, (MX 4000 2 x Log Line)
Long-term max. output power	2 x 40 watts/8 ohms
Harmonic distortion	<0.5% at 15 watts
Intermodulation	<1%
Signal/noise ratio	>50 dB weighted 50 mW (Nicam >70 dB)
Frequency range	25-20,000 Hz ±1.5 dB
Power bandwidth	25-20,000 Hz
Channel separation	A2 stereo >26 (Nicam >50 dB)
Bass control	±8 dB/100 Hz
Treble control	±8 dB/10,000 Hz
Crossover frequency	3200 Hz
Other data	
Mains voltage	230 volts, 50-60 Hz
Power consumption	95 (75-200) watts
Power consumption Stand-by	3.5 watts
Dimensions W x H x D/Weight	LX5000 78 x 47 x 42 cm/36.5 kg
	LX6000 86 x 52 x 46 cm/43 kg
	MX4000 51 x 55 x 41.5 cm/23 kg
	MX6000 65 x 67.5 x 46.5 cm/40.3 kg

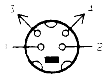
Accessories	
Nicam module	1412700 system B/G/I
D2 MAC module	1300300
Beosat LM installation kit	1300200 (with sw version 3.0 or higher)
Positioner module	1301200
Power positioner module	8729020
NTSC system M module	*8007997
Picture-in-picture module	1412600
	1412300 (MX4000)
Transposer	*1306125 white
	*1306126 black
Sound extension kit:	
Pal I sound kit for B/G/L	*3390452
East D/K sound kit for B/G/L	*3390453
Stands LX5000 - LX6000	
Table: TB 4108	1410865, white
	1410866, black
Traverse: LX6000 - TR 4103	1410365, white
	1410366, black
LX5000 - TR 4104	1410465, white
	1410466, black
Shelf: LX6000 - SH 4111	1411113, metal grey
LX5000 - SH 4112	1411213, metal grey
Stand: ST 4117	1411766, black
	1411769, silver grey
Shelf: SH 4113	1411366, black
Motorized stand: MS 4106	1410666, black
	1410669, silver grey
Shelf: SH 4113	1411366, black
Motorized base: MB 4101	1410111, aluminium
Stands MX4000 - MX6000	
Table MX4000 - TB 4110	1411066, black
	1411069, silver grey
Shelf: VX - SH 4113	1411366, black
Stand MX6000 - ST 4109	1410966, black
	1410969, silver grey
Shelf: VX - SH 4113	1411366, black
Motorized stand MX6000 - MS 4107	1410766, black
	1410769, silver grey
MX4000 - MS 4116	1411666, black
	1411669, silver grey
Shelf: VX - SH 4113	1411366, black
Motorized base MX6000 - MB 4102	1410211, aluminium
MX4000 - MB 4105	1410511, aluminium
Wall bracket MX4000 - WB 4114	1411466, black
Motorized wall bracket MX4000 - MW 4115	1411566, black

AV1 & AV2



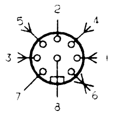
Pin 1	Audio R out 1V RMS 820 ohms
Pin 2	Audio R in 1V RMS 47 kohms
Pin 3	Audio L out 1V RMS 820 ohms
Pin 4	Audio ⊥
Pin 5	Blue ⊥
Pin 6	Audio L in 1V RMS 47 kohms
Pin 7	Blue in 0.7Vpp 75 ohms
Pin 8	12V sense Logic 0 = 0V-2V 10 kohms
	Logic 1 = 9.5V-12V 10 kohms
	Data High: Logic 0 = 9.5V-10.3V
	Logic 1 = 11V-12V
	Low: Logic 0 = 0V-0.55V
	Logic 1 = 1.25V-2V
Pin 9	Green ⊥
Pin 10	Not used
Pin 11	Green in 0.7 Vpp 75 ohms
Pin 12	Not used
Pin 13	Red ⊥
Pin 14	Blanking ⊥
Pin 15	Red in 0.7 Vpp 75 ohms
Pin 16	Blanking in Logic 0=0 to 0.4V
	Logic 1=1 to 3V
	R in 75 ohms
Pin 17	Video out ⊥
Pin 18	Video in ⊥
Pin 19	Composite video out 1Vpp 75 ohms
	(Y-insert only AV1)
Pin 20	Composite video in 1Vpp 75 ohms
Pin 21	Shield

S-VHS



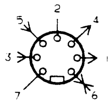
Pin 1	Y ⊥
Pin 2	C ⊥
Pin 3	Luminance in (Y) 1Vpp 75 ohms
Pin 4	Chrominance in (C) 75 ohms

POWER LINK 1&2



Pin 1	PL ON = >2.5V, OFF = <0.5V
Pin 2	Signal ⊥
Pin 3	AF out left max. 1V RMS
Pin 4	PL Speaker ON = >2.5 V, OFF = <0.5V
Pin 5	AF out right max. 1V RMS
Pin 6	Data: High >3.5V, Low <0.8V
Pin 7	⊥
Pin 8	Not used

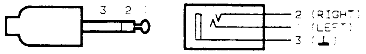
AUDIO AUX LINK



Pin 1	AF in left 0.25 - 2V RMS 47 kohms
Pin 2	Signal ⊥
Pin 3	AF out left 1V RMS 1 kohms
Pin 4	AF in right 0.25-2V RMS 47 kohms
Pin 5	AF out right 1V RMS 1 kohms
Pin 6	Data: High >3.5V, Low <0.8V
Pin 7	Not used

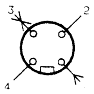
EXTERNAL SPEAKERS L&R >8 ohms passive speakers

HEADPHONE



Ø3.5 mm 220 ohms in series
to the output amplifier.
The internal and external
speakers are switched off
when the headphone is connected.

B&O STAND



Pin 1	Supply out 12.5V-15V max. 350 mA
Pin 2	Supply ⊥
Pin 3	Data
Pin 4	Data ⊥

Subject to change without notice

*TYPE SURVEY									Mounting modules for modification to other TV transmission systems				
LX6000	LX5000	MX6000	MX4000	System	Colour	Stereo	Remarks		PAL B/G/I	PAL/SECAM B/G/L/I1)	PAL/SECAM B/G/D/K	PAL/SECAM B/G/L1)	PAL/SECAM B/G NTSC M
3340	3360	3300	3320	B/G/L1)	PAL/SECAM	A2		EU		3390452	3390453		8007997
3341	3361	3301	3321	B/G/L1)	PAL/SECAM	A2+NICAM		EU		3390452	3390453		8007997
3343	3363	3303	3323	I	PAL	NICAM		GB	3390452 +8007449	3390452 +8007449 +8008062	3390453 +8007449 +8008062	8007449 +8008062	8007997 +8008062
3344	3364	3304	3324	B/G/L1)	PAL/SECAM	A2		Italy		3390452	3390453		8007997
3345	3365	3305	3325	B/G/L1)	PAL	A2		AUS	3390452 +8007449	3390452 +8007449 +8008062	3390453 +8007449 +8008062	8007449 +8008062	8007997 +8008062
3346	3366	3306	3326	B/G/L1)	PAL/SECAM	A2	SAT	EU		3390452	3390453		8007997
3347	3367	3307	3327	B/G/L1)	PAL/SECAM	A2+NICAM	SAT	EU		3390452	3390453		8007997
3348	3368	3308	3328	B/G/L1)	PAL/SECAM	A2+NICAM	SAT D2 MAC	EU		3390452	3390453		8007997
3349	3369	3309	3329	I	PAL	NICAM	SAT	GB	3390452 +8007449	3390452 +8007449 +8008062	3390453 +8007449 +8008062	8007449 +8008062	8007997 +8008062
3350	3370	3310	3330	I	PAL	NICAM	SAT D2 MAC	GB	3390452 +8007449	3390452 +8007449 +8008062	3390453 +8007449 +8008062	8007449 +8008062	8007997 +8008062

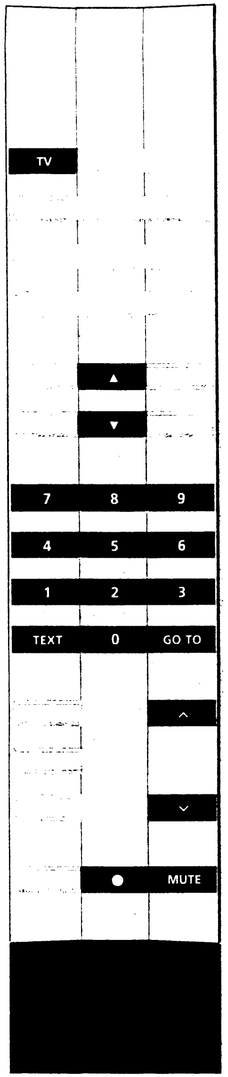
1) System L: To receive VHF band 1 system L, the TV has to be fitted with a transposer part no. 1306125 (white) 1306126 (black).

8007449 Tuner & IF system B/G/L PCB.
3390452 Small bag with components to extend 8007449 to system I.
3390453 Small bag with components to modify 8007449 to system B/G/D/K.
8008062 PAL/SECAM/NTSC colour decoder PCB. TV's equiped with 8008062 (PAL/SECAM MODELS) are able to receive NTSC on AV.
8007997 Tuner & IF system B/G/M PCB.

BRIEF OPERATION GUIDE

Beolink 1000 MK III
Main/daily operations

TV	Switches on the TV *You will see the TV program you were last watching* *The program number and the program name appear briefly at the top of the screen*
▲ *or* ▼	Steps through programs
0 *through* 9	Selects specific programs: press 0 alone to switch to the program you were last on
TEXT	Switches to teletext *Press ▲ or ▼ to step through the memory pages*
GO TO	Enables you to access specific teletext pages *Press GO TO, then key in the page number desired using the number buttons, or press ▲ or ▼*
˄	Raises the volume
˅	Lowers the volume
MUTE	Mutes the sound immediately *Press again to recall the sound*
●	Switches off the TV *The red stand-by light appears in the upper right-hand corner of the screen*



Options and shift functions:
See Repair tips

Sound and picture adjustments:

Raises/lovers the level	˄ ˅

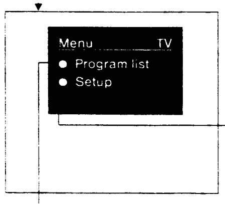
Sound adjustments:

		On-screen display:	
Volume level	SOUND	Volume 44	
Reset the sound levels	SHIFT MUTE	Volume 34	
*Internal speakers	1	Volume 34	Int.
*External PL speakers	2	Volume 34	Ext.
*Int. and ext. speakers	3	Volume 34	All
Store all sound levels	STORE STORE		
Loudspeaker balance	SOUND	Balance L - - - = - - - R	
Bass level	SOUND	Bass 0	
Treble level	SOUND	Treble 0	
Loudness	SOUND	Loudness off	
Switch sound type	SHIFT SOUND	TV3 Mono Language 1	
Store the current sound to the program number	STORE 3 STORE		

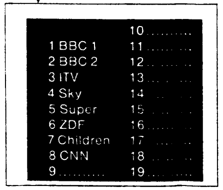
*Only if you have connected a pair of Bang & Olufsen Power Link speakers.
Select "Power Link: On" in the Setup menu (see Menu).

Menu:

TV menu	MENU
Select item	» «


Menu TV
- Program list
- Setup

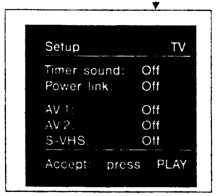
Program list	PLAY
Select program	7
Previous/next page	» «



1 BBC 1	10 ....
2 BBC 2	11 ....
3 ITV	12 ....
4 Sky	13 ....
5 Super	14 ....
6 ZDF	15 ....
7 Children	16 ....
8 CNN	17 ....
9	18 ....
	19 ....

- ***You only have to program the TV setup if.....***
  - *You have connected Power Link speakers*
  - *You have connected a compatible Bang & Olufsen audio system*
  - *You have connected a Bang & Olufsen video tape recorder of a type other than the Beocord VX*
  - *You have connected any non-Bang & Olufsen AV equipment*

● Setup menu	PLAY
Select setup item	» «
Change item setup	▲ ▼
Return to Menu	STOP
No storing	TV


Setup TV
Timer sound: Off
Power link: Off
AV 1: Off
AV 2: Off
S-VHS: Off
Accept: press PLAY

Picture adjustments:

		On-screen display:
Brilliance level	PICTURE	Brilliance 32
Mute/unmute picture	MUTE	
Store all picture levels	STORE STORE	
Colour intensity	PICTURE	Colour 32
Contrast level	PICTURE	Contrast 44

Clock:

Display the time	PLAY
Teletext time	TEXT
Manual time set	1 9 3 0
Store the time	STORE STORE

Tuning:	TV	**On-screen display:**
Tuning function	GOTO	Tune F:210 ○ Dec off Sys:B/G
Up/down the frequencies	▲ ▼	Tuning F:xxx
Key in frequency	2 1 0	Tune F:210 Sys: B/G
○ Decoder on/off	SHIFT PICTURE	Tune F:210 Dec on Sys:B/G
Manual TV-system switching	SHIFT 3	Tune F:210 Sys:L
Fine tuning	GOTO	Fine tune F:210
Up/down the steps	▲ ▼	Fine tune F:210 + 2
Naming TV stations	GOTO	Program name: ....
Reveal the letter or number	▲ ▼	Program name: A
Upper/lower case	0	Program name: a
Next character	» «	Program name: A ■
Storing function	STORE	TV -- (red)
Program number	5 9	TV 59 (red)
Clear program number	0	TV - 0 (red)
Store/clear the station	STORE	TV59/TV (light blue)

○ Decoder
The Dec off cue appears in the tuning display only if you have set up the TV for decoder use (see Menu).

EXPLANATION OF DIAGRAM

Type numbers of transistors and ICs are indicated on the diagrams. If the position number is followed by an asterisk the spare part number must always be used because the component in question has been specially selected, e.g. TR102*.

Component print and coordinate system

The largest PCBs have component prints and a coordinate system on both the print and the component side.
On the diagrams every component has a coordinate number. This indicates in which coordinate on the PCB the component is situated. The coordinate numbers are written in smaller print types than the position numbers.

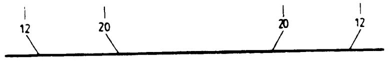
Control Circuit

In certain control circuits the active mode is indicated by a function term or by an abbreviation. This may be e.g. $\overline{\text{ST.BY.}}$ = low in the stand-by mode or ST.BY. = high in the stand-by mode.

Wiring Connections

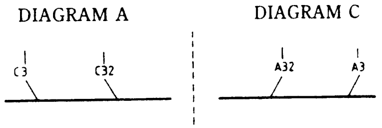
The wiring connections on the diagrams are assembled in 'bundles'. The individual wires are provided with one of the following codes:

INTERNAL CONNECTION ON ONE DIAGRAM PAGE



Internal connections on a diagram page are indicated by a number. The bend of the wire indicates in which direction the other end of the wire is found.

CONNECTION TO ANOTHER DIAGRAM PAGE



A connection to another diagram page is indicated by a number as well as by a letter of the diagram to which the connection leads.

Ground symbols

Three different ground symbols are used in the diagrams:

⏚ = Ground that is not galvanically separated from the mains. (Used in diagram I, PCB4).

⊥ = Ground

⏊ = Signal ground

Signal paths and IC markings

The signal paths are shown in the diagrams by means of semibold lines and arrow heads. As shown, three different types of arrow head are used:

—>— = Video, luminance and chrominance signals

—>>— = Sound signal

—>>>— = Other signals

The arrow heads shown in the IC pins tell whether the pin indicated is an input or an output.

MEASURING CONDITIONS

Measure all DC voltages in relation to ground and with voltmeter or oscilloscope with inner resistance of at least 2 Mohm.

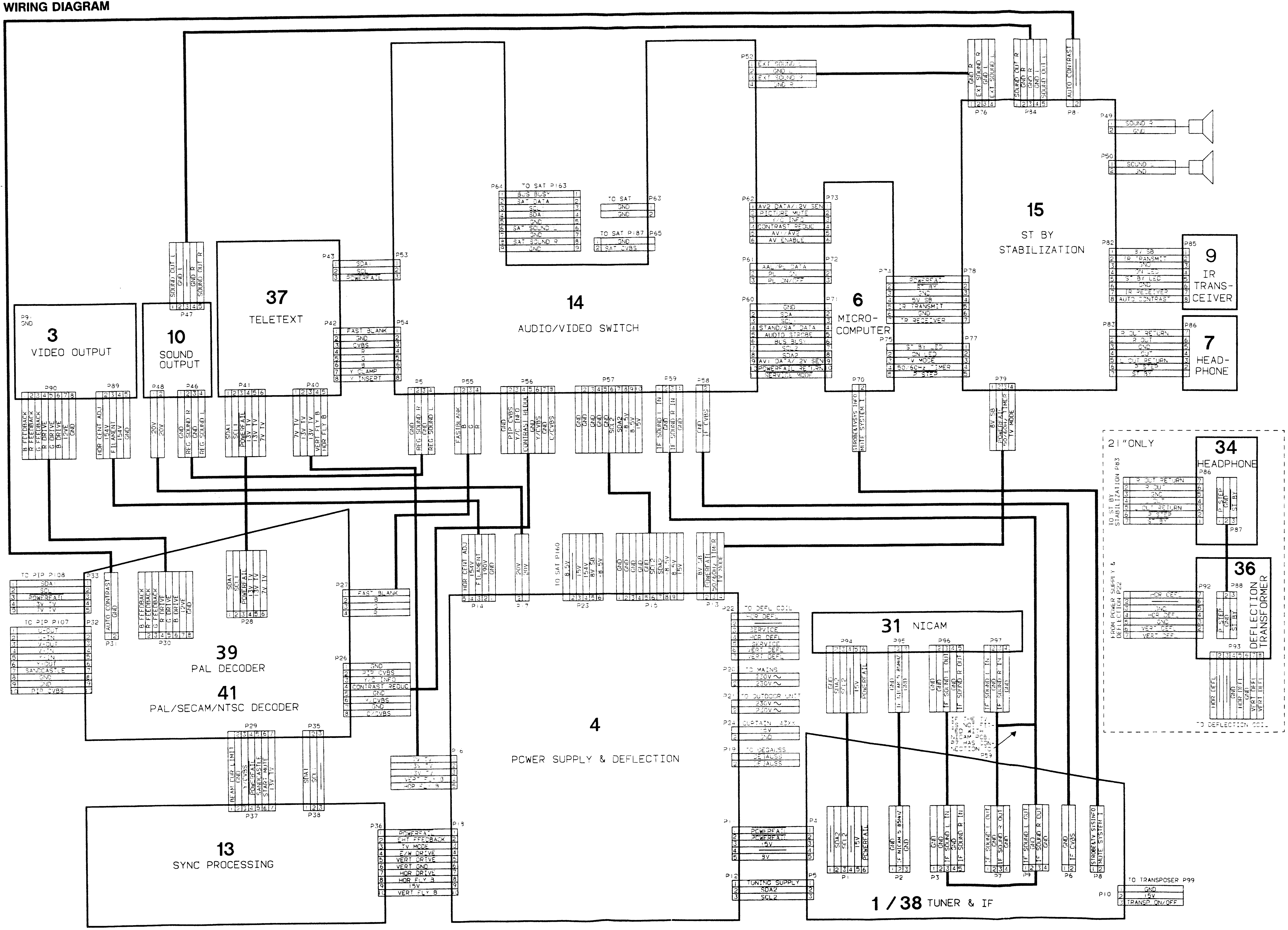
Measure DC voltages and oscilloscope pictures in TV mode at an UHF aerial signal (colour bar) of approx. 1.5 mV. Brilliance step 32, contrast step 44 and colour saturation step 32.

SYMBOL FOR SAFETY RESISTORS

⚠

When replacing components with this symbol the same type has to be used, also the same values for ohm and watt. The new component is to be mounted in the same way as the replaced one.

WIRING DIAGRAM


3
VIDEO OUTPUT
10
SOUND OUTPUT
37
TELETEXT
14
AUDIO/VIDEO SWITCH
6
MICRO-COMPUTER
15
ST BY STABILIZATION
9
IR TRANS-CEIVER
7
HEAD-PHONE
21" ONLY
34
HEADPHONE
36
DEFLECTION TRANSFORMER
39
PAL DECODER
41
PAL/SECAM/NTSC DECODER
4
POWER SUPPLY & DEFLECTION
31
NICAM
13
SYNC PROCESSING
1 / 38 TUNER & IF
TO SAT P163
TO SAT
TO SAT P187
TO PIP P108
TO PIP P107
TO SAT P160
TO DEFL COIL
TO MAINS
TO OUTDOOR UNIT
CURTAIN 43XX
TO DEGAUSS
TUNING SUPPLY
TO TRANSPOSER P99
TO DEFLECTION COIL
TO ST BY STABILIZATION P83
FROM POWER SUPPLY & DEFLECTION P22
IF THE TV DOES NOT CONTAIN NICAM PCB, P7 HAS CONNECTION TO P59
SOUND R
SOUND L
EXT SOUND L
EXT SOUND R
AUTO CONTRAST
FAST BLANK
SDA
SCL
POWERFAIL
GND

OVERALL BLOCK DIAGRAM

Overall block diagram system B/G/L for Tuner & IF system I PCB38 and Pal Decoder PCB39, see separate block diagrams

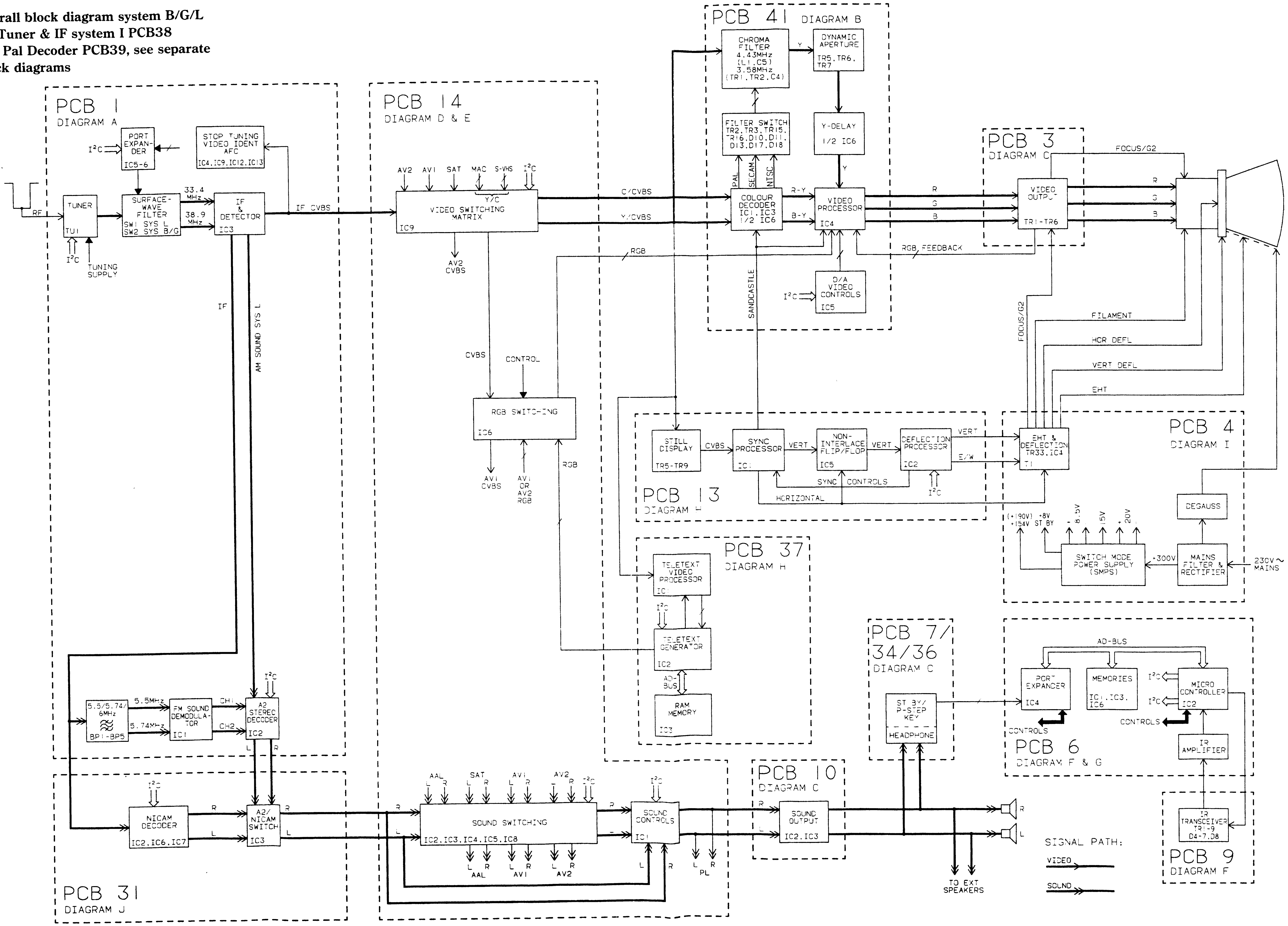
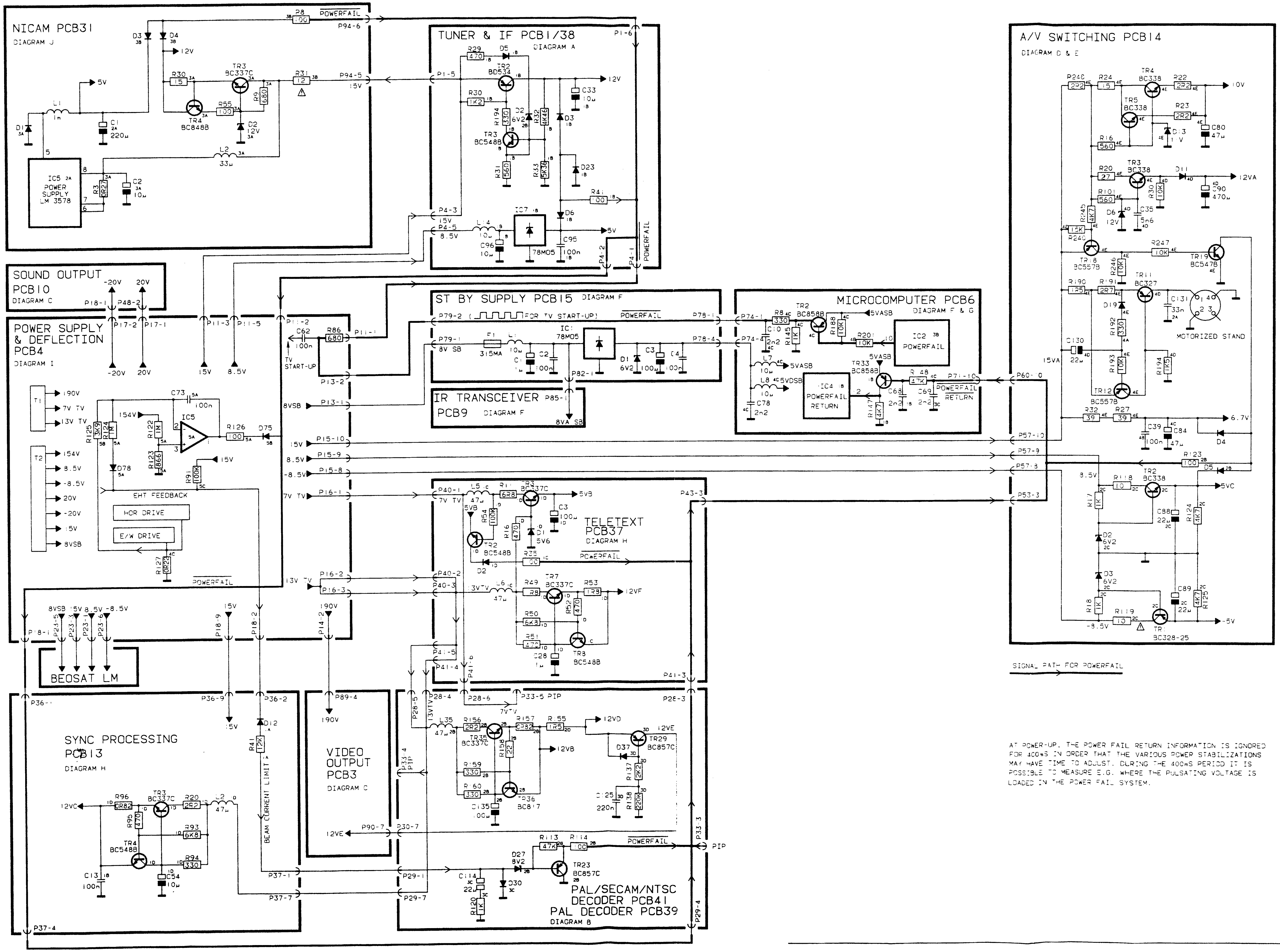
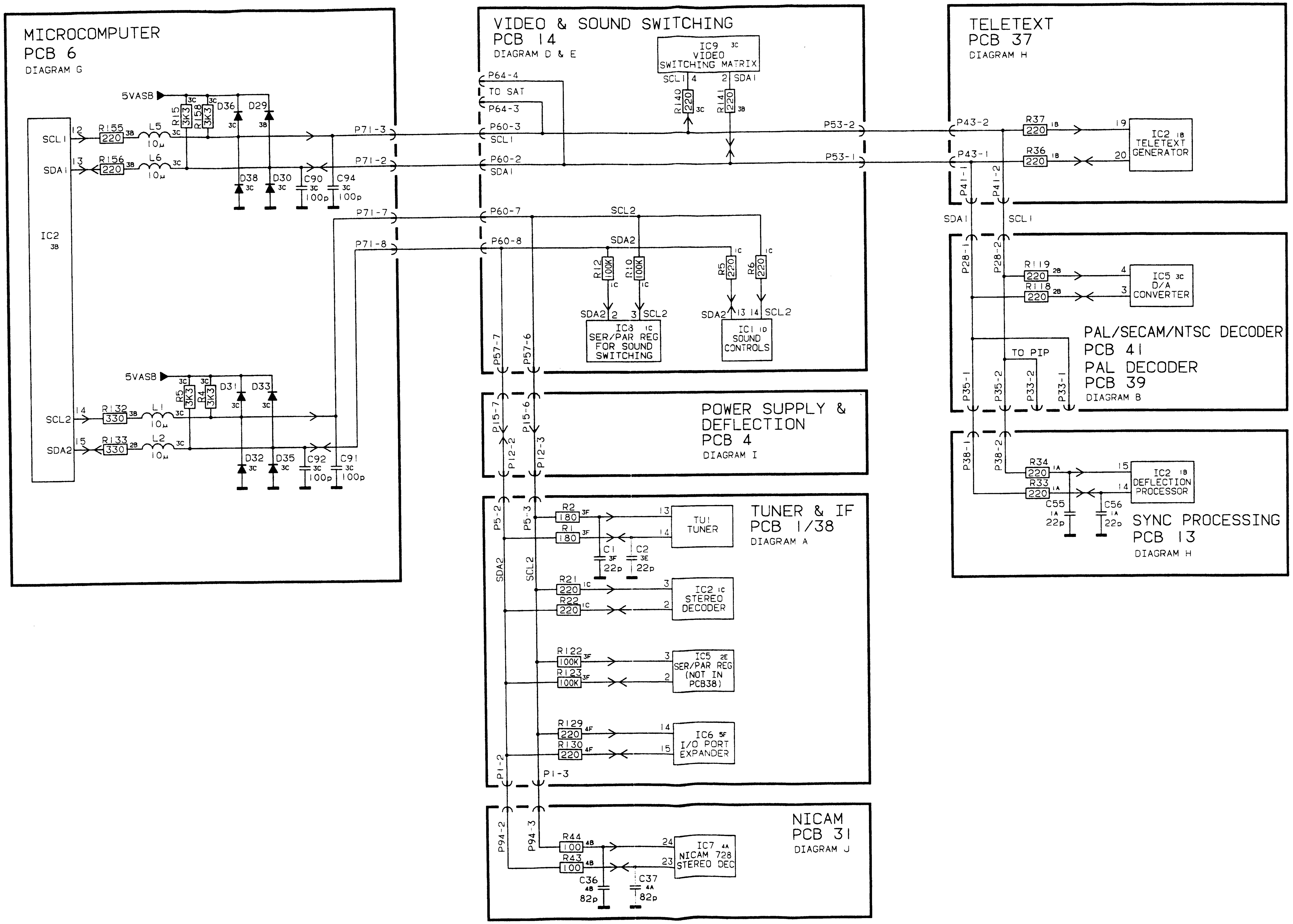

PCB 1
DIAGRAM A
RF
TUNER
TU1
I²C
TUNING SUPPLY
I²C
PORT EXPANDER
IC5-6
SURFACE-WAVE FILTER
SW1 SYS L
SW2 SYS B/G
33.4 MHz
38.9 MHz
STOP TUNING VIDEO IDENT AFC
IC4, IC9, IC12, IC13
IF & DETECTOR
IC3
IF CVBS
IF
AM SOUND SYS L
PCB 14
DIAGRAM D & E
AV2 AV1 SAT MAC S-VHS I²C
Y/C
VIDEO SWITCHING MATRIX
IC9
AV2 CVBS
CVBS
CONTROL
RGB SWITCHING
IC6
AV1 CVBS
AV1 OR AV2 RGB
RGB
C/CVBS
Y/CVBS
RGB
PCB 41
DIAGRAM B
CHROMA FILTER 4.43MHz (L1, C5) 3.58MHz (TR1, TR2, C4)
Y
DYNAMIC APERTURE
TR5, TR6, TR7
FILTER SWITCH TR2, TR3, TR15, TR16, D10, D11, D13, D17, D18
Y-DELAY
1/2 IC6
Y
PAL
SECAM
NTSC
COLOUR DECODER IC1, IC3 1/2 IC6
R-Y
B-Y
VIDEO PROCESSOR
IC4
SANDCASTLE
I²C
D/A VIDEO CONTROLS
IC5
R
G
B
RGB FEEDBACK
PCB 3
DIAGRAM C
VIDEO OUTPUT
TR1-TR6
FOCUS/G2
R
G
B
FOCUS/G2
FILAMENT
HOR DEFL
VERT DEFL
EHT
PCB 13
DIAGRAM H
STILL DISPLAY
TR5-TR9
CVBS
SYNC PROCESSOR
IC1
VERT
NON-INTERLACE FLIP/FLOP
IC5
VERT
DEFLECTION PROCESSOR
IC2
SYNC CONTROLS
I²C
HORIZONTAL
VERT
E/W
PCB 4
DIAGRAM I
EHT & DEFLECTION TR33, IC1
T1
DEGAUSS
(+190V) +8V +154V ST BY
8.5V
5V
20V
SWITCH MODE POWER SUPPLY (SMPS)
+300V
MAINS FILTER & RECTIFIER
230V~ MAINS
PCB 37
DIAGRAM H
TELETEXT VIDEO PROCESSOR
IC1
I²C
TELETEXT GENERATOR
IC2
AD-BUS
RAM MEMORY
IC3
PCB 7/34/36
DIAGRAM C
ST BY/P-STEP KEY
HEADPHONE
PCB 6
DIAGRAM F & G
AD-BUS
PORT EXPANDER
IC4
MEMORIES
IC1, IC3, IC6
I²C
I²C
MICRO CONTROLLER
IC2
CONTROLS
CONTROLS
IR AMPLIFIER
PCB 9
DIAGRAM F
IR TRANSCEIVER TR1-9 D4-7, D8
5.5/5.74/6MHz
BP1-BP5
5.5MHz
5.74MHz
FM SOUND DEMODULATOR
IC1
CH1
CH2
I²C
A2 STEREO DECODER
IC2
L R
PCB 31
DIAGRAM J
I²C
NICAM DECODER
IC2, IC6, IC7
R
L
A2/NICAM SWITCH
IC3
R
L
AAL SAT AV1 AV2 I²C
L R
SOUND SWITCHING
IC2, IC3, IC4, IC5, IC8
L R L R L R
AAL AV1 AV2
I²C
SOUND CONTROLS
IC1
L R
L R
PL
PCB 10
DIAGRAM C
SOUND OUTPUT
IC2, IC3
TO EXT SPEAKERS
R
L
SIGNAL PATH:
VIDEO
SOUND

DIAGRAM FOR POWER SUPPLY AND POWER FAIL

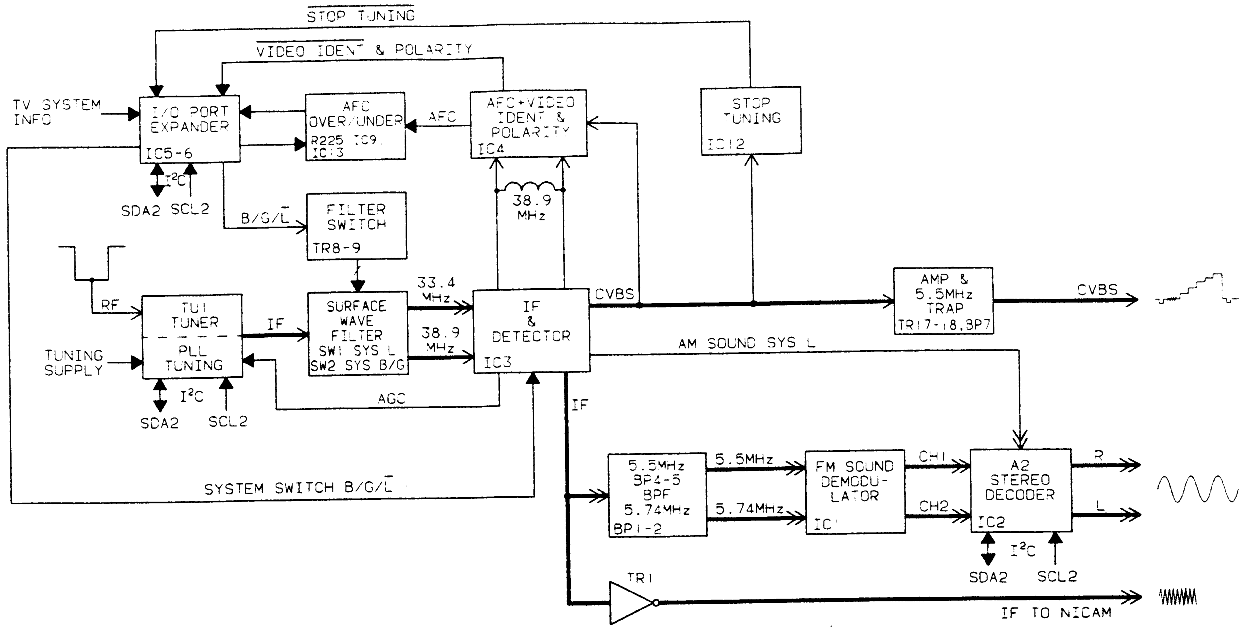

NICAM PCB31
DIAGRAM J
IC5 POWER SUPPLY LM 3578
POWERFAIL
P94-6
P94-5
15V
5V
12V
TUNER & IF PCB1/38
DIAGRAM A
78M05
POWERFAIL
SOUND OUTPUT PCB10
DIAGRAM C
-20V
20V
POWER SUPPLY & DEFLECTION PCB4
DIAGRAM I
190V
7V TV
13V TV
154V
8.5V
-8.5V
20V
-20V
15V
8VSB
EHT FEEDBACK
HOR DRIVE
E/W DRIVE
POWERFAIL
TV START-UP
ST BY SUPPLY PCB15
DIAGRAM F
FOR TV START-UP
POWERFAIL
315MA
78M05
IR TRANSCEIVER PCB9
DIAGRAM F
8VA SB
MICROCOMPUTER PCB6
DIAGRAM F & G
IC2 POWERFAIL
IC4 POWERFAIL RETURN
POWERFAIL RETURN
5VASB
5VDSB
A/V SWITCHING PCB14
DIAGRAM D & E
10V
12VA
MOTORIZED STAND
6.7V
5VC
-5V
TELETEXT PCB37
DIAGRAM H
5VB
12VF
POWERFAIL
BEOSAT LM
SYNC PROCESSING PCB13
DIAGRAM H
12VC
BEAM CURRENT LIMIT
VIDEO OUTPUT PCB3
DIAGRAM C
12VE
PAL/SECAM/NTSC DECODER PCB41
PAL DECODER PCB39
DIAGRAM B
12VD
12VB
12VE
POWERFAIL
PIP
SIGNAL PATH FOR POWERFAIL

AT POWER-UP, THE POWER FAIL RETURN INFORMATION IS IGNORED FOR 400mS IN ORDER THAT THE VARIOUS POWER STABILIZATIONS MAY HAVE TIME TO ADJUST. DURING THE 400mS PERIOD IT IS POSSIBLE TO MEASURE E.G. WHERE THE PULSATING VOLTAGE IS LOADED IN THE POWER FAIL SYSTEM.

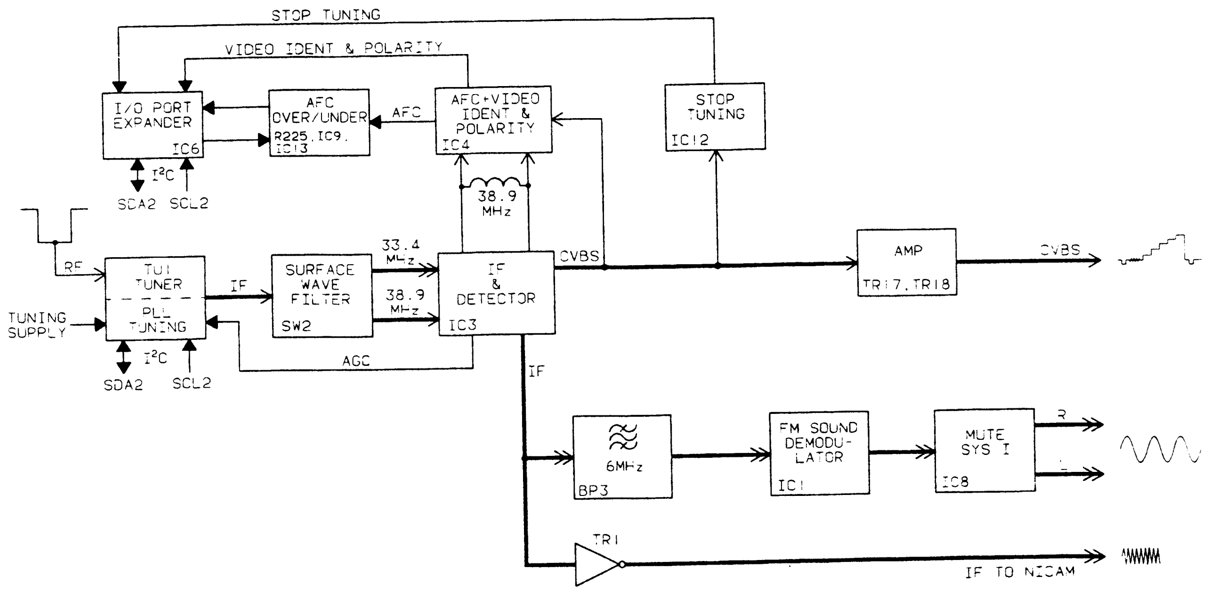
BLOCK DIAGRAM I^{2}C BUS


MICROCOMPUTER
PCB 6
DIAGRAM G
5VASB
R15 3K3
R158 3K3
D36
D29
SCL1
SDA1
R155 220
R156 220
L5 10µ
L6 10µ
D38
D30
C90 100p
C94 100p
IC2 3B
SCL2
SDA2
R132 330
R133 330
L1 10µ
L2 10µ
R5 3K3
R4 3K3
D31
D33
D32
D35
C92 100p
C91 100p
P71-3
P71-2
P71-7
P71-8
VIDEO & SOUND SWITCHING
PCB 14
DIAGRAM D & E
P64-4
TO SAT
P64-3
P60-3
P60-2
P60-7
P60-8
IC9 3C
VIDEO
SWITCHING MATRIX
R140 220
R141 220
SCL2
SDA2
R12 100K
R10 100K
R5 220
R6 220
IC8 1C
SER/PAR REG
FOR SOUND
SWITCHING
IC1 1D
SOUND
CONTROLS
P57-7
P57-6
P53-2
P53-1
POWER SUPPLY &
DEFLECTION
PCB 4
DIAGRAM I
P15-7
P15-6
P12-2
P12-3
TUNER & IF
PCB 1/38
DIAGRAM A
P5-2
P5-3
R2 180
R1 180
TU1
TUNER
C1 22p
C2 22p
R21 220
R22 220
IC2 1C
STEREO
DECODER
R122 100K
R123 100K
IC5 2E
SER/PAR REG
(NOT IN
PCB38)
R129 220
R130 220
IC6 5F
I/O PORT
EXPANDER
P1-2
P1-3
NICAM
PCB 31
DIAGRAM J
P94-2
P94-3
R44 100
R43 100
C36 82p
C37 82p
IC7 4A
NICAM 728
STEREO DEC
TELETEXT
PCB 37
DIAGRAM H
P43-2
P43-1
R37 220
R36 220
IC2 1B
TELETEXT
GENERATOR
P41-1
P41-2
SDA1
SCL1
P28-1
P28-2
R119 220
R118 220
IC5 3C
D/A
CONVERTER
PAL/SECAM/NTSC DECODER
PCB 41
PAL DECODER
PCB 39
DIAGRAM B
TO PIP
P35-1
P35-2
P33-2
P33-1
P38-1
P38-2
R34 220
R33 220
C55 22p
C56 22p
IC2 1B
DEFLECTION
PROCESSOR
SYNC PROCESSING
PCB 13
DIAGRAM H

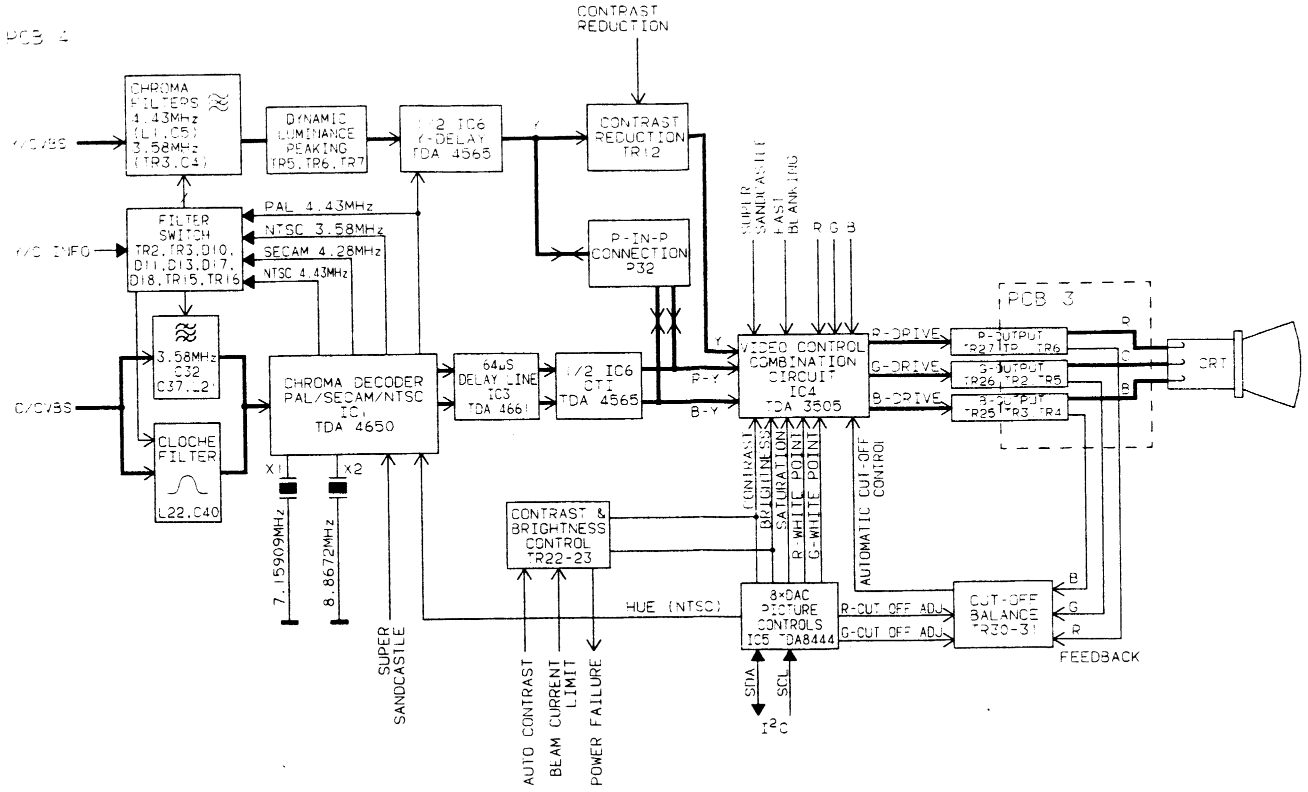
BLOCK DIAGRAM TUNER & IF SYSTEM B/G/L


STOP TUNING
VIDEO IDENT & POLARITY
TV SYSTEM INFO
I/O PORT EXPANDER
IC5-6
AFC OVER/UNDER
R225 IC9 IC13
AFC
AFC+VIDEO IDENT & POLARITY
IC4
STOP TUNING
IC12
I^2C
SDA2 SCL2
B/G/L
FILTER SWITCH
TR8-9
38.9 MHz
RF
TU1 TUNER
PLL TUNING
TUNING SUPPLY
IF
SURFACE WAVE FILTER
SW1 SYS L
SW2 SYS B/G
33.4 MHz
38.9 MHz
IF & DETECTOR
IC3
CVBS
AMP & 5.5MHz TRAP
TR17-18, BP7
CVBS
AM SOUND SYS L
AGC
I^2C
SDA2
SCL2
IF
SYSTEM SWITCH B/G/L
5.5MHz BP4-5 BPF 5.74MHz
BP1-2
5.5MHz
5.74MHz
FM SOUND DEMODULATOR
IC1
CH1
CH2
A2 STEREO DECODER
IC2
R
L
I^2C
SDA2
SCL2
TR1
IF TO NICAM

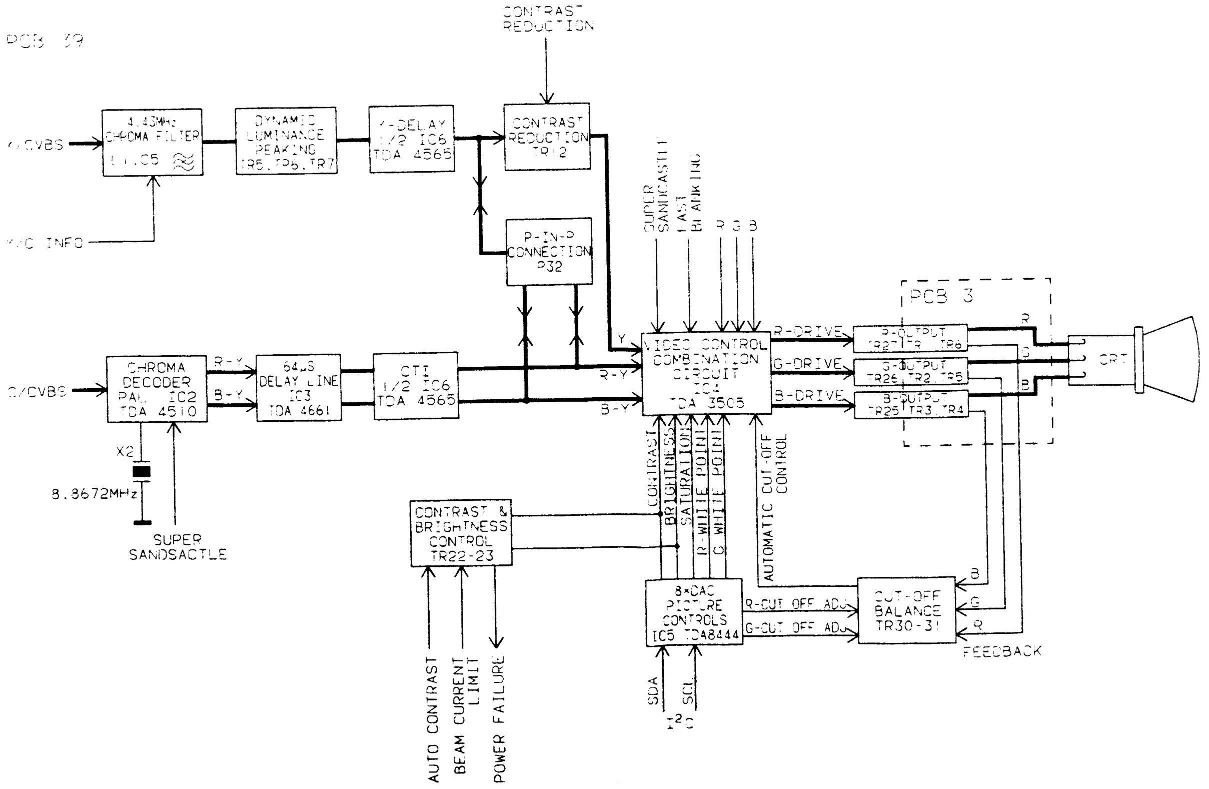
BLOCK DIAGRAM TUNER & IF SYSTEM I


STOP TUNING
VIDEO IDENT & POLARITY
I/O PORT EXPANDER
IC6
AFC OVER/UNDER
R225, IC9, IC13
AFC
AFC+VIDEO IDENT & POLARITY
IC4
STOP TUNING
IC12
I^2C
SDA2 SCL2
38.9 MHz
RF
TU1 TUNER
PLL TUNING
TUNING SUPPLY
IF
SURFACE WAVE FILTER
SW2
33.4 MHz
38.9 MHz
IF & DETECTOR
IC3
CVBS
AMP
TR17, TR18
CVBS
AGC
I^2C
SDA2
SCL2
IF
6MHz
BP3
FM SOUND DEMODULATOR
IC1
MUTE SYS I
IC8
R
L
TR1
IF TO NICAM

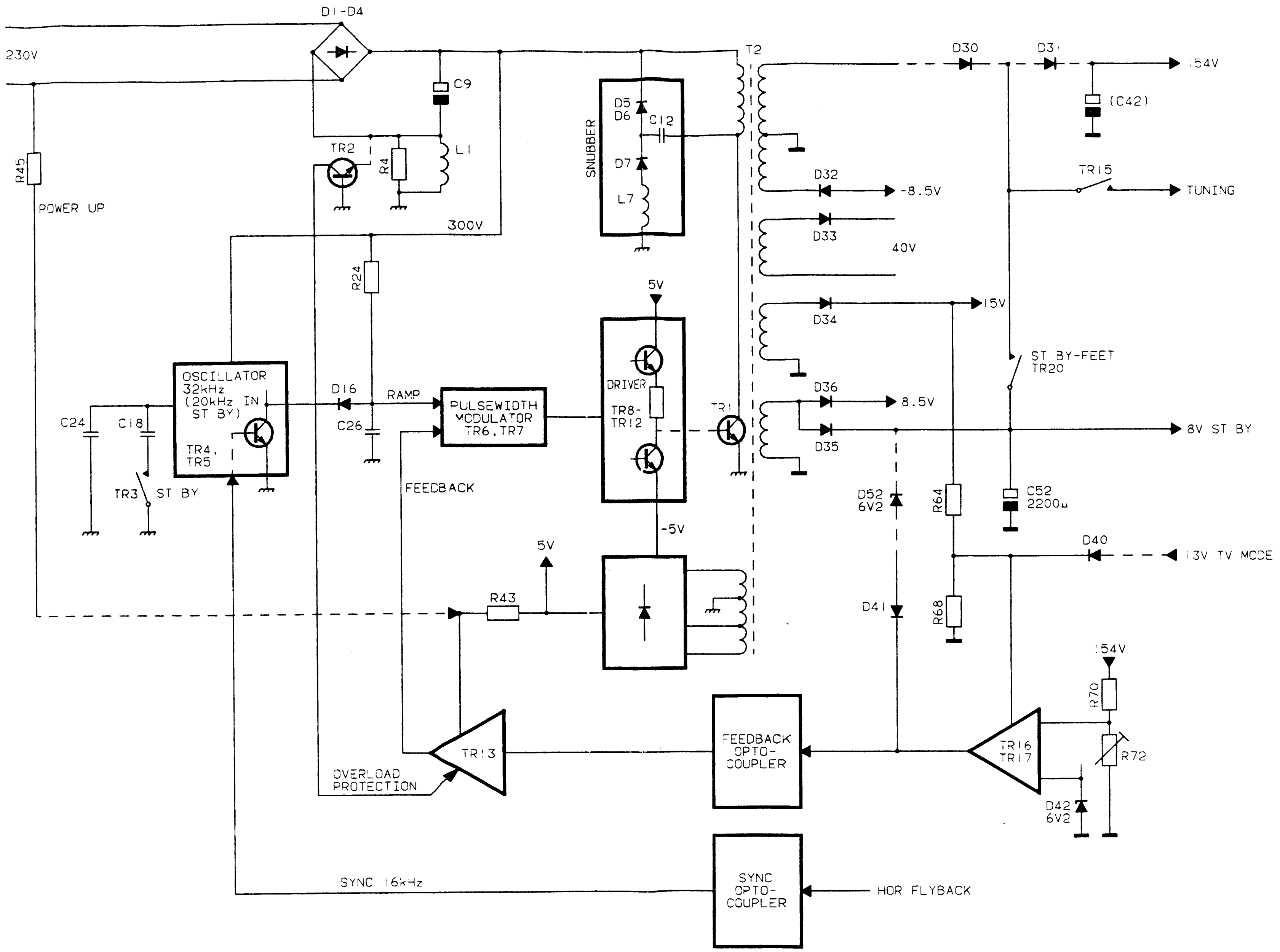
BLOCK DIAGRAM PAL/SECAM/NTSC DECODER


PCB 4
CONTRAST REDUCTION
Y/CVBS
CHROMA FILTERS 4.43MHz (L1, C5) 3.58MHz (TR3, C4)
DYNAMIC LUMINANCE PEAKING TR5, TR6, TR7
1/2 IC6 Y-DELAY TDA 4565
Y
CONTRAST REDUCTION TR12
Y/C INFO
FILTER SWITCH TR2, TR3, D10, D11, D13, D17, D18, TR15, TR16
PAL 4.43MHz
NTSC 3.58MHz
SECAM 4.28MHz
NTSC 4.43MHz
P-IN-P CONNECTION P32
SUPER SANDCASTLE
FAST BLANKING
R G B
PCB 3
3.58MHz C32 C37, L21
C/CVBS
CLOCHE FILTER
L22, C40
CHROMA DECODER PAL/SECAM/NTSC IC1 TDA 4650
64µS DELAY LINE IC3 TDA 4661
1/2 IC6 CTI TDA 4565
R-Y
B-Y
Y
VIDEO CONTROL COMBINATION CIRCUIT IC4 TDA 3505
R-DRIVE
G-DRIVE
B-DRIVE
R-OUTPUT TR27, TR, TR6
G-OUTPUT TR26, TR2, TR5
B-OUTPUT TR25, TR3, TR4
R
G
B
CRT
X1
X2
7.15909MHz
8.8672MHz
SUPER SANDCASTLE
CONTRAST & BRIGHTNESS CONTROL TR22-23
CONTRAST
BRIGHTNESS
SATURATION
R-WHITE POINT
G-WHITE POINT
AUTOMATIC CUT-OFF CONTROL
HUE (NTSC)
8×DAC PICTURE CONTROLS IC5 TDA8444
R-CUT OFF ADJ.
G-CUT OFF ADJ.
CUT-OFF BALANCE TR30-31
B
G
R
FEEDBACK
AUTO CONTRAST
BEAM CURRENT LIMIT
POWER FAILURE
SDA
SCL
I^2C

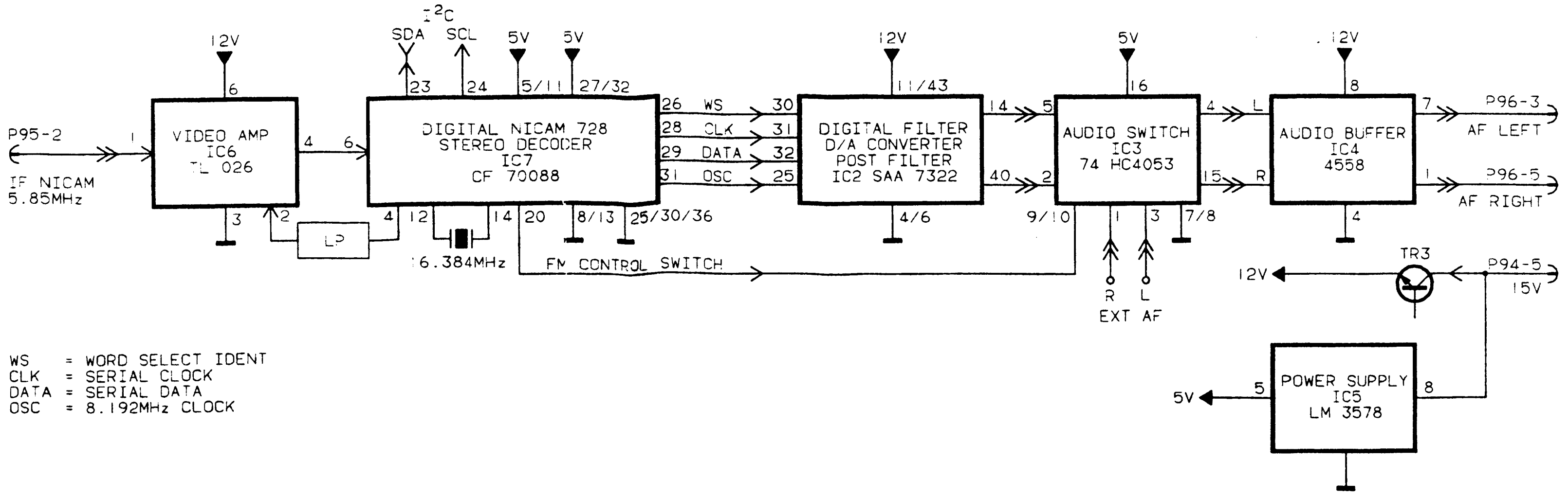
BLOCK DIAGRAM PAL DECODER


PCB 39
CONTRAST REDUCTION
Y/CVBS
4.43MHz CHROMA FILTER L1, C5
DYNAMIC LUMINANCE PEAKING TR5, TR6, TR7
Y-DELAY 1/2 IC6 TDA 4565
CONTRAST REDUCTION TR12
Y/C INFO
P-IN-P CONNECTION P32
SUPER SANDCASTLE
FAST BLANKING
R G B
PCB 3
Y
C/CVBS
CHROMA DECODER PAL IC2 TDA 4510
R-Y
B-Y
64µS DELAY LINE IC3 TDA 4661
CTI 1/2 IC6 TDA 4565
R-Y
B-Y
VIDEO CONTROL COMBINATION CIRCUIT IC4 TDA 3505
R-DRIVE
G-DRIVE
B-DRIVE
R-OUTPUT TR27, TR, TR6
G-OUTPUT TR26, TR2, TR5
B-OUTPUT TR25, TR3, TR4
R
G
B
CRT
X2
8.8672MHz
SUPER SANDSACTLE
CONTRAST & BRIGHTNESS CONTROL TR22-23
CONTRAST
BRIGHTNESS
SATURATION
R-WHITE POINT
G-WHITE POINT
AUTOMATIC CUT-OFF CONTROL
8×DAC PICTURE CONTROLS IC5 TDA8444
R-CUT OFF ADJ.
G-CUT OFF ADJ.
CUT-OFF BALANCE TR30-31
B
G
R
FEEDBACK
AUTO CONTRAST
BEAM CURRENT LIMIT
POWER FAILURE
SDA
SCL
I^2C

BLOCK DIAGRAM SWITCH MODE POWER SUPPLY


D1-D4
230V
C9
T2
D30
D31
154V
(C42)
SNUBBER
D5
D6
C12
D7
L7
TR2
R4
L1
R45
POWER UP
300V
D32
-8.5V
TR15
TUNING
D33
40V
R24
5V
D34
15V
ST BY-FEET
TR20
OSCILLATOR
32kHz
(20kHz IN ST BY)
TR4, TR5
C24
C18
TR3
ST BY
D16
RAMP
C26
PULSEWIDTH MODULATOR TR6, TR7
DRIVER
TR8-TR12
TR11
D36
8.5V
D35
8V ST BY
FEEDBACK
D52
6V2
R64
C52
2200µ
5V
-5V
D40
13V TV MODE
R43
D41
R68
154V
R70
TR13
FEEDBACK OPTO-COUPLER
TR16
TR17
R72
OVERLOAD PROTECTION
D42
6V2
SYNC OPTO-COUPLER
SYNC 16kHz
HOR FLYBACK

BLOCK DIAGRAM NICAM


12V
I²C
SDA
SCL
5V
5V
12V
5V
12V
P95-2
IF NICAM
5.85MHz
VIDEO AMP
IC6
TL 026
DIGITAL NICAM 728
STEREO DECODER
IC7
CF 70088
WS
CLK
DATA
OSC
DIGITAL FILTER
D/A CONVERTER
POST FILTER
IC2 SAA 7322
AUDIO SWITCH
IC3
74 HC4053
AUDIO BUFFER
IC4
4558
P96-3
AF LEFT
P96-5
AF RIGHT
LP
16.384MHz
FM CONTROL SWITCH
R
L
EXT AF
TR3
12V
P94-5
15V
5V
POWER SUPPLY
IC5
LM 3578
6
1
4
6
23
24
5/11
27/32
26
28
29
31
30
31
32
25
11/43
14
40
5
2
16
4
15
L
R
8
7
1
3
2
4
12
14
20
8/13
25/30/36
4/6
9/10
1
3
7/8
4
5
8

WS = WORD SELECT IDENT
CLK = SERIAL CLOCK
DATA = SERIAL DATA
OSC = 8.192MHz CLOCK

BLOCK DIAGRAM FOR POWER SUPPLY & DEFLECTION

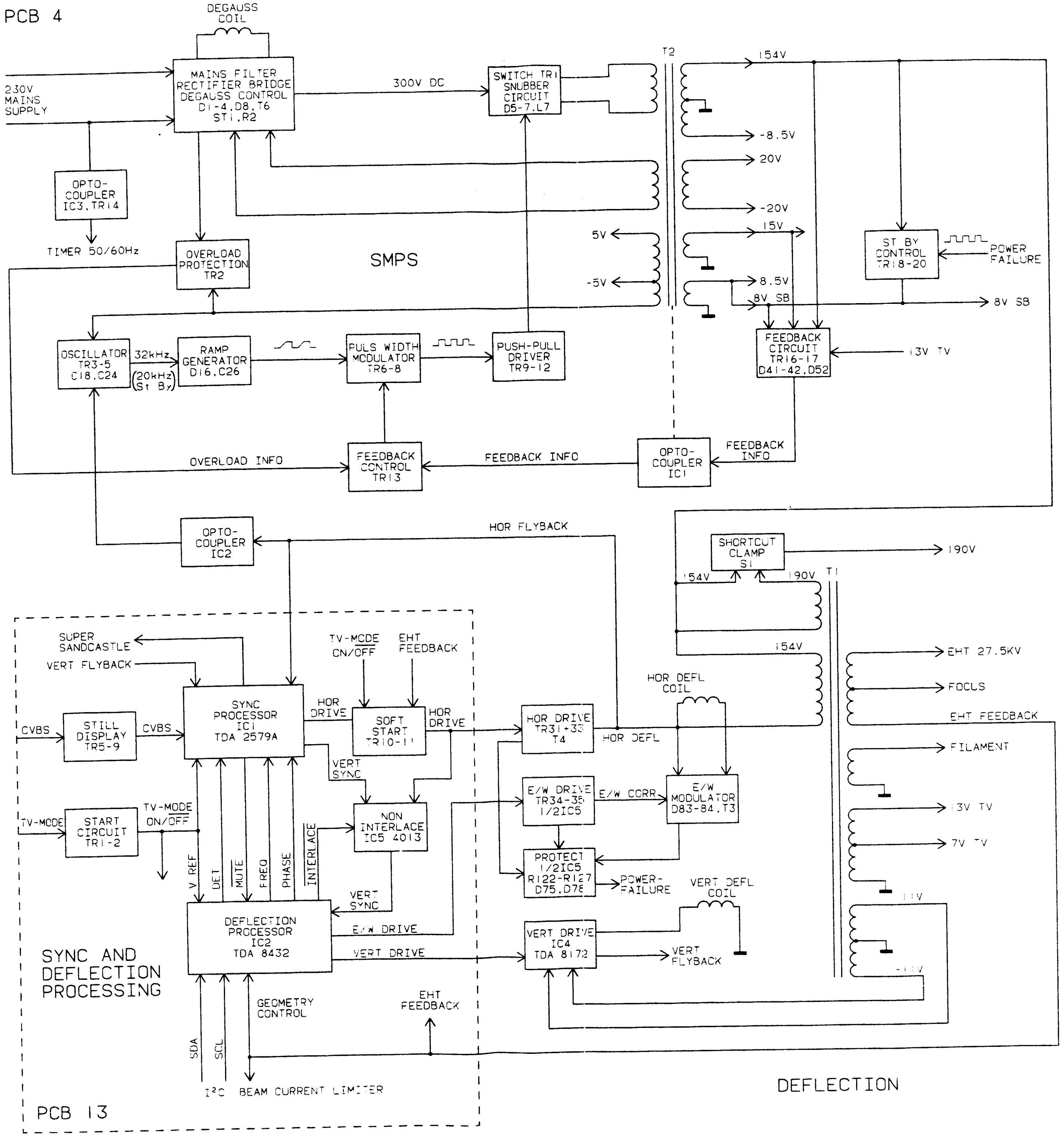
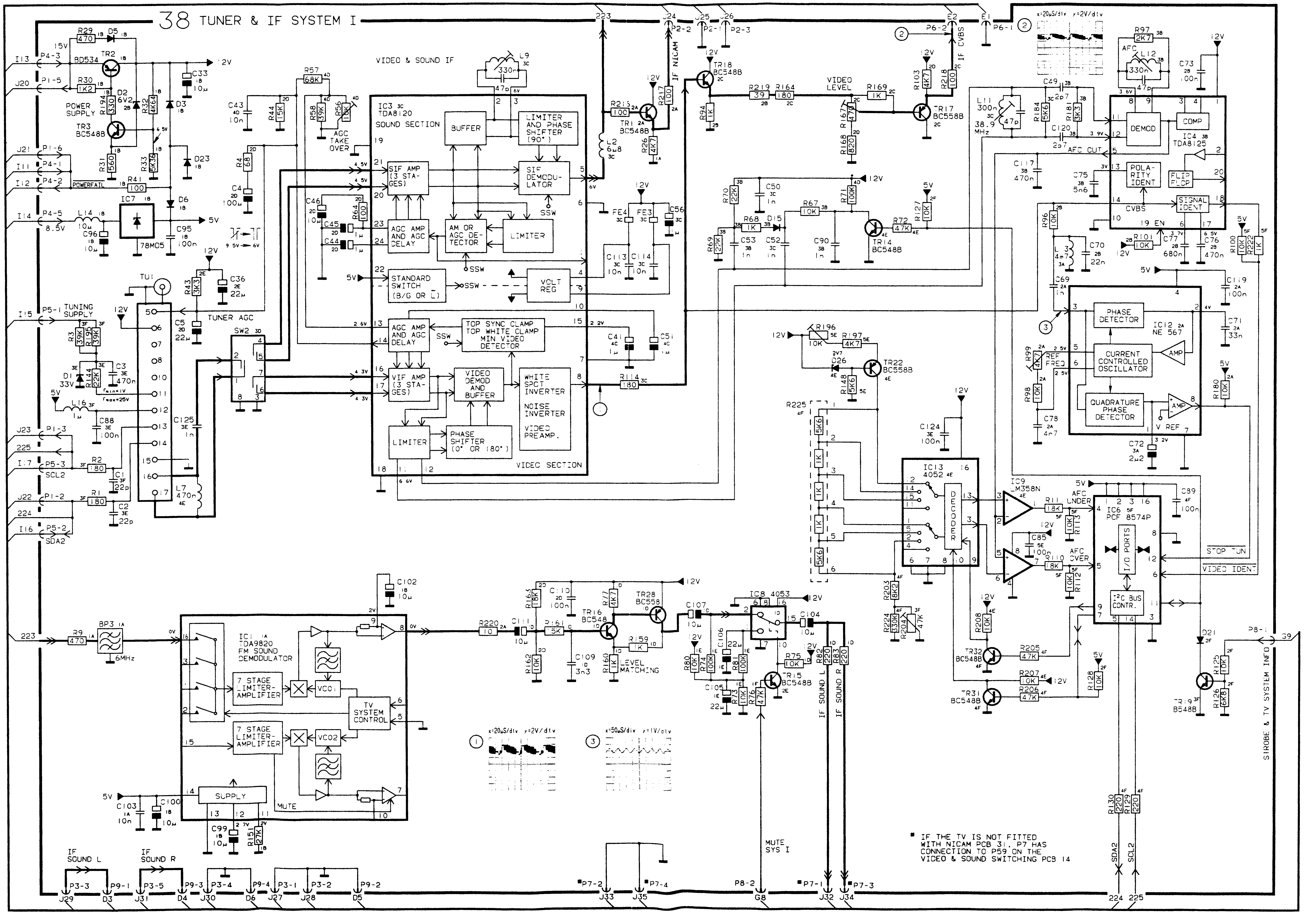
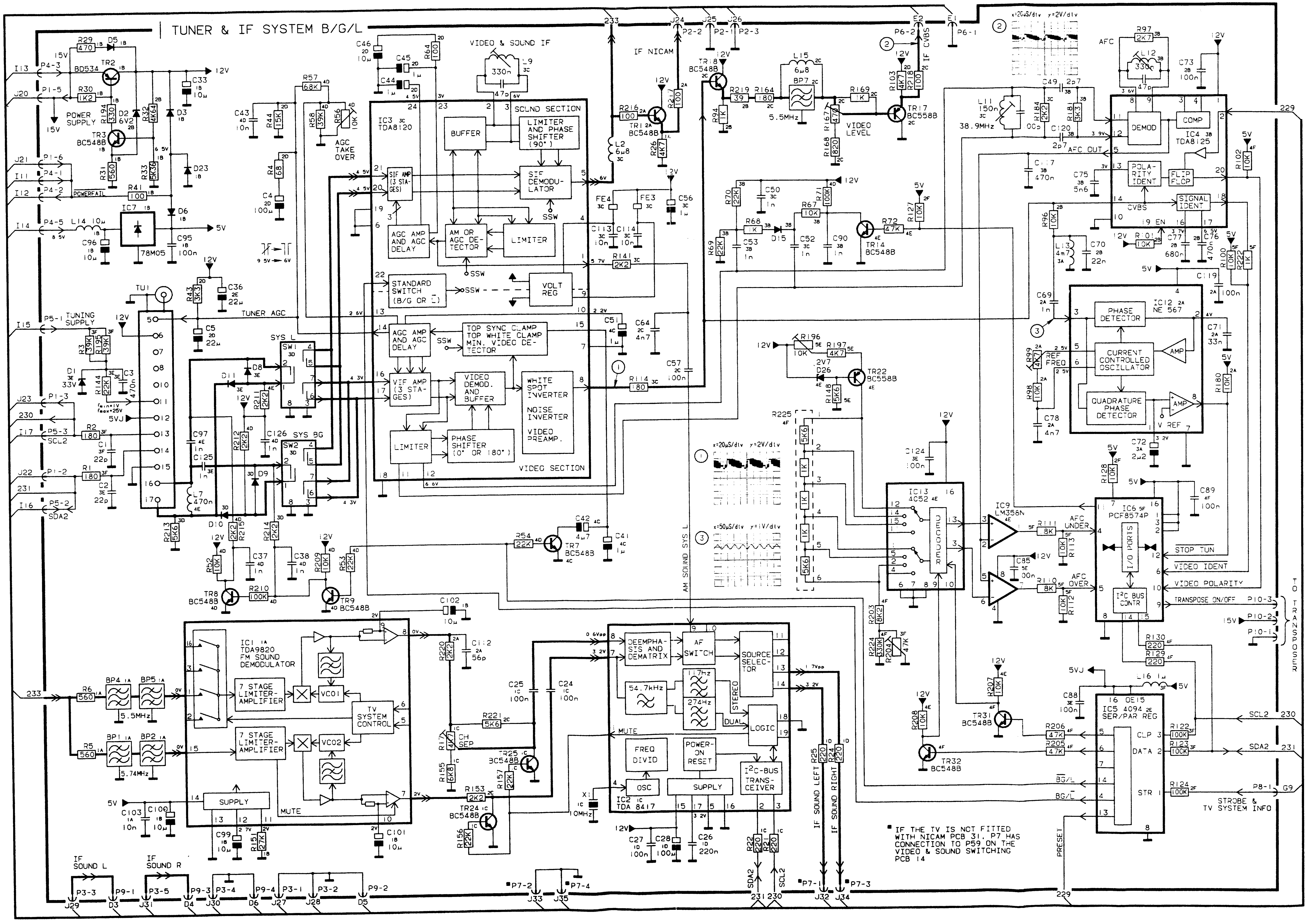

PCB 4
DEGAUSS COIL
230V MAINS SUPPLY
MAINS FILTER RECTIFIER BRIDGE DEGAUSS CONTROL D1-4.D8.T6 ST1.R2
300V DC
SWITCH TR1 SNUBBER CIRCUIT D5-7.L7
T2
154V
-8.5V
20V
-20V
15V
5V
-5V
8.5V
8V SB
8V SB
OPTO-COUPLER IC3.TR14
TIMER 50/60Hz
OVERLOAD PROTECTION TR2
SMPS
ST BY CONTROL TR18-20
POWER FAILURE
OSCILLATOR TR3-5 C18.C24
32kHz
(20kHz St By)
RAMP GENERATOR D16.C26
PULS WIDTH MODULATOR TR6-8
PUSH-PULL DRIVER TR9-12
FEEDBACK CIRCUIT TR16-17 D41-42.D52
13V TV
OVERLOAD INFO
FEEDBACK CONTROL TR13
FEEDBACK INFO
OPTO-COUPLER IC1
FEEDBACK INFO
OPTO-COUPLER IC2
HOR FLYBACK
SHORTCUT CLAMP S1
190V
154V
190V
T1
154V
SUPER SANDCASTLE
VERT FLYBACK
TV-MODE CN/OFF
EHT FEEDBACK
SYNC PROCESSOR IC1 TDA 2579A
HOR DRIVE
SOFT START TR10-11
HOR DRIVE
CVBS
STILL DISPLAY TR5-9
CVBS
VERT SYNC
TV-MODE
START CIRCUIT TR1-2
TV-MODE ON/OFF
NON INTERLACE IC5 4013
V REF
DET
MUTE
FREQ
PHASE
INTERLACE
VERT SYNC
DEFLECTION PROCESSOR IC2 TDA 8432
E/W DRIVE
VERT DRIVE
SYNC AND DEFLECTION PROCESSING
SDA
SCL
GEOMETRY CONTROL
EHT FEEDBACK
I²C
BEAM CURRENT LIMITER
PCB 13
HOR DEFL COIL
HOR DRIVE TR31+33 T4
HOR DEFL
E/W DRIVE TR34-35 1/2IC5
E/W CORR
E/W MODULATOR D83-84.T3
PROTECT 1/2IC5 R122-R127 D75.D78
POWER-FAILURE
VERT DEFL COIL
VERT DRIVE IC4 TDA 8172
VERT FLYBACK
EHT 27.5KV
FOCUS
EHT FEEDBACK
FILAMENT
13V TV
7V TV
DEFLECTION

DIAGRAM A TUNER & IF SYSTEM B/G/L


38 TUNER & IF SYSTEM I
VIDEO & SOUND IF
POWER SUPPLY
TR2 BD534
TR3 BC548B
IC7 78M05
POWERFAIL
TU1
TUNING SUPPLY
TUNER AGC
SW2
IC3 TDA8120
SOUND SECTION
BUFFER
LIMITER AND PHASE SHIFTER (90°)
SIF AMP (3 STAGES)
SIF DEMODULATOR
AGC AMP AND AGC DELAY
AM OR AGC DETECTOR
LIMITER
STANDARD SWITCH (B/G OR L)
VOLT REG
AGC AMP AND AGC DELAY
TOP SYNC CLAMP TOP WHITE CLAMP MIN VIDEO DETECTOR
VIF AMP (3 STAGES)
VIDEO DEMOD AND BUFFER
WHITE SPOT INVERTER
NOISE INVERTER
VIDEO PREAMP.
PHASE SHIFTER (0° OR 180°)
VIDEO SECTION
AGC TAKE OVER
IF NICAM
IF CVBS
VIDEO LEVEL
TR18 BC548B
TR17 BC558B
TR11 BC548B
TR14 BC548B
TR22 BC558B
IC4 TDA8125
DEMOD
COMP
POLARITY IDENT
FLIP FLOP
SIGNAL IDENT
AFC CUT
IC12 NE 567
PHASE DETECTOR
CURRENT CONTROLLED OSCILLATOR
QUADRATURE PHASE DETECTOR
AMP
V REF
IC13 4052
DECODER
IC9 LM358N
AFC UNDER
AFC OVER
IC6 PCF 8574P
I/O PORTS
I²C BUS CONTR.
STOP TUN
VIDEO IDENT
IC1 TDA9820 FM SOUND DEMODULATOR
7 STAGE LIMITER-AMPLIFIER
VCO1
VCO2
TV SYSTEM CONTROL
SUPPLY
MUTE
BP3 6MHz
TR16 BC548
TR28 BC558
LEVEL MATCHING
IC8 4053
TR15 BC548B
TR32 BC548B
TR31 BC548B
TR19 BC548B
IF SOUND L
IF SOUND R
MUTE SYS I
STROBE & TV SYSTEM INFO
SDA2
SCL2
x=20µS/div y=2V/div
x=50µS/div y=1V/div
① ② ③

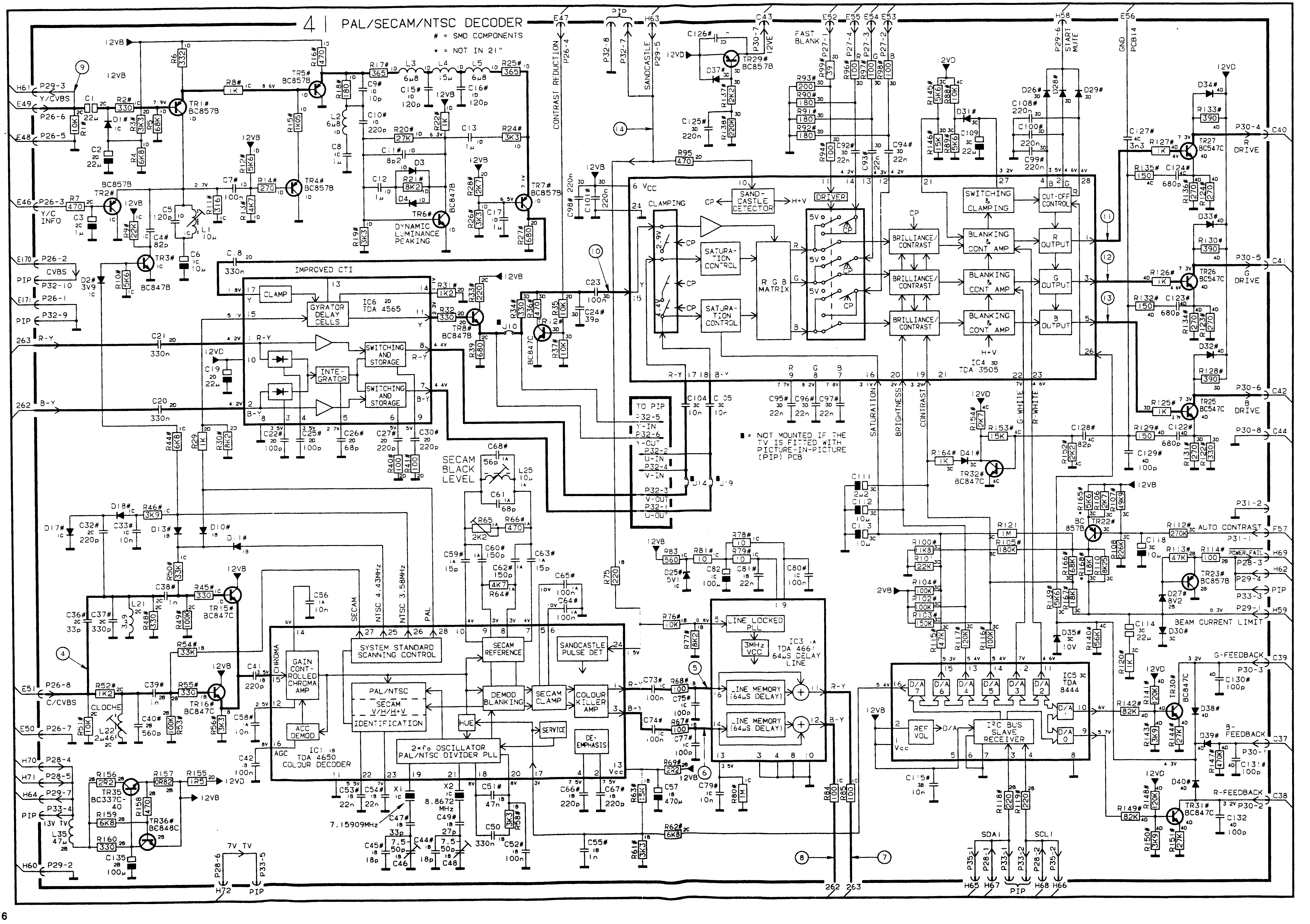
* IF THE TV IS NOT FITTED WITH NICAM PCB 31, P7 HAS CONNECTION TO P59 ON THE VIDEO & SOUND SWITCHING PCB 14

DIAGRAM A TUNER & IF SYSTEM I

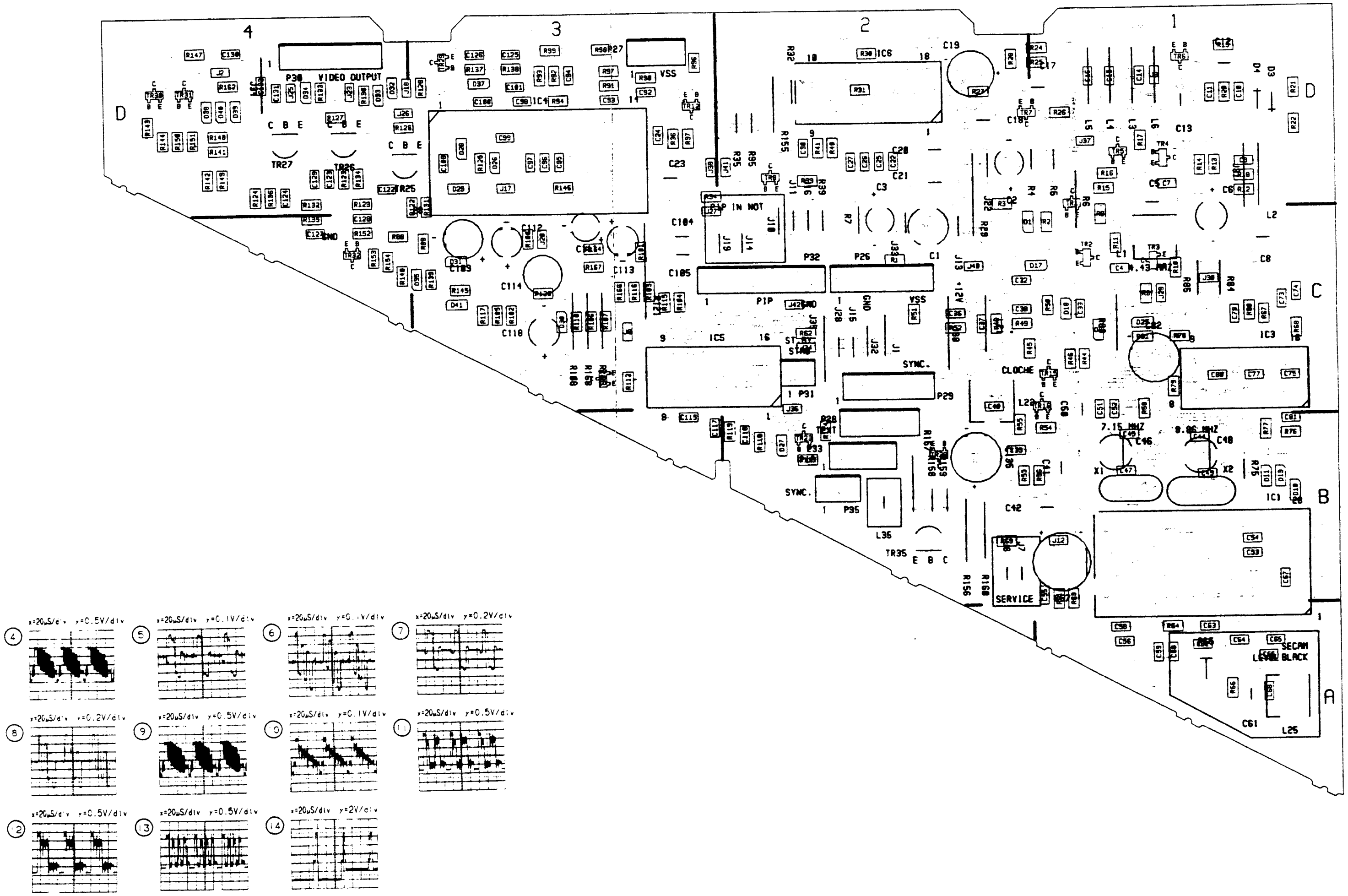

TUNER & IF SYSTEM B/G/L
POWER SUPPLY
15V
12V
5V
BD534
TR2
TR3 BC548B
D2 6V2
D3
D23
D6
IC7
78M05
POWERFAIL
TU1
TUNING SUPPLY
TUNER AGC
SYS L
SW1
SYS BG
SW2
D8
D9
D10
D11
VIDEO & SOUND IF
L9
AGC TAKE OVER
IC3 TDA8120
SOUND SECTION
BUFFER
LIMITER AND PHASE SHIFTER (90°)
SIF DEMODULATOR
SIF AMP (3 STAGES)
AGC AMP AND AGC DELAY
AM OR AGC DETECTOR
LIMITER
STANDARD SWITCH (B/G OR L)
SSW
VOLT REG
TOP SYNC CLAMP TOP WHITE CLAMP MIN. VIDEO DETECTOR
VIF AMP (3 STAGES)
VIDEO DEMOD. AND BUFFER
WHITE SPOT INVERTER
NOISE INVERTER
VIDEO PREAMP.
PHASE SHIFTER (0° OR 180°)
VIDEO SECTION
IF NICAM
TR1 BC548B
TR18 BC548B
L15
BP7
5.5MHz
VIDEO LEVEL
TR17 BC558B
IF CVBS
P6-2
P6-1
TR14 BC548B
D15
TR22 BC558B
D26
R225
AM SOUND SYS L
x=20µS/div y=2V/div
x=50µS/div y=1V/div
L11 150n
38.9MHz
AFC
L12
AFC OUT
IC4 TDA8125
DEMOD
COMP
POLARITY IDENT
FLIP FLOP
SIGNAL IDENT
CVBS
EN
IC12 NE 567
PHASE DETECTOR
CURRENT CONTROLLED OSCILLATOR
AMP
QUADRATURE PHASE DETECTOR
V REF
REF FREQ
IC13 4C52
IC9 LM356N
AFC UNDER
AFC OVER
IC6 PCF8574P
I/O PORTS
I²C BUS CONTR
STOP TUN
VIDEO IDENT
VIDEO POLARITY
TRANSPOSE ON/OFF
TO TRANSPOSER
P10-3
P10-2
P10-1
IC1 TDA9820 FM SOUND DEMODULATOR
7 STAGE LIMITER-AMPLIFIER
VCO1
VCO2
TV SYSTEM CONTROL
SUPPLY
MUTE
BP4
BP5
BP1
BP2
5.5MHz
5.74MHz
CH SEP
TR25 BC548B
TR24 BC548B
TR7 BC548B
TR8 BC548B
TR9 BC548B
IC2 TDA 8417
DEEMPHASIS AND DEMATRIX
AF SWITCH
SOURCE SELECTOR
54.7kHz
117Hz
274Hz
STEREO
DUAL
LOGIC
FREQ DIVID
POWER-ON RESET
OSC
I²C-BUS TRANSCEIVER
X1 10MHz
IF SOUND LEFT
IF SOUND RIGHT
TR31 BC548B
TR32 BC548B
IC5 4094 SER/PAR REG
CLP
DATA
STR
BG/L
PRESET
SCL2
SDA2
STROBE & TV SYSTEM INFO
P8-1
G9
IF SOUND L
IF SOUND R
P3-3 P9-1 P3-5 P9-3 P3-4 P9-4 P3-1 P3-2 P9-2
J29 D3 J31 D4 J30 D6 J27 J28 D5
P7-2 P7-4 J33 J35
231 230
P7-1 P7-3 J32 J34
229
233
I13 J20 J21 I11 I12 I14 I15 J23 230 I17 J22 231 I16
P4-3 P1-5 P1-6 P4-1 P4-2 P4-5 P5-1 P1-3 P5-3 P1-2 P5-2

■ IF THE TV IS NOT FITTED WITH NICAM PCB 31, P7 HAS CONNECTION TO P59 ON THE VIDEO & SOUND SWITCHING PCB 14

DIAGRAM B PAL/SECAM/NTSC DECODER (○ = FOR OSCILLOSCOPE PICTURES SEE PAGE 2-12)


41 PAL/SECAM/NTSC DECODER
# = SMD COMPONENTS
• = NOT IN 21"
■ = NOT MOUNTED IF THE TV IS FITTED WITH PICTURE-IN-PICTURE (PIP) PCB
IMPROVED CTI
CLAMP
GYRATOR DELAY CELLS
IC6 TDA 4565
SWITCHING AND STORAGE
INTE-GRATOR
DYNAMIC LUMINANCE PEAKING
SECAM BLACK LEVEL
TO PIP
Y-IN
Y-OUT
U-IN
V-IN
V-OUT
U-OUT
CLAMPING
SAND-CASTLE DETECTOR
DRIVER
SATURA-TION CONTROL
R G B MATRIX
BRILLIANCE/CONTRAST
BLANKING & CONT AMP
SWITCHING & CLAMPING
CUT-OFF CONTROL
R OUTPUT
G OUTPUT
B OUTPUT
IC4 TDA 3505
SATURATION
BRIGHTNESS
CONTRAST
G-WHITE
R-WHITE
CONTRAST REDUCTION
SANDCASTLE
FAST BLANK
START MUTE
GND
R DRIVE
G DRIVE
B DRIVE
AUTO CONTRAST
POWER FAIL
BEAM CURRENT LIMIT
G-FEEDBACK
B-FEEDBACK
R-FEEDBACK
GAIN CONT-ROLLED CHROMA AMP
ACC DEMOD
SYSTEM STANDARD SCANNING CONTROL
PAL/NTSC SECAM V/H/H+V IDENTIFICATION
2×fo OSCILLATOR PAL/NTSC DIVIDER PLL
HUE
SECAM REFERENCE
DEMOD BLANKING
SECAM CLAMP
SANDCASTLE PULSE DET
COLOUR KILLER AMP
SERVICE
DE-EMPHASIS
IC1 TDA 4650 COLOUR DECODER
AGC
CHROMA
SECAM
NTSC 4.43MHz
NTSC 3.58MHz
PAL
7.15909MHz
8.8672 MHz
LINE LOCKED PLL
3MHz VCO
IC3 TDA 4661 64µS DELAY LINE
LINE MEMORY (64µS DELAY)
IC5 TDA 8444
I²C BUS SLAVE RECEIVER
REF VOL
D/A
SDA1
SCL1
Y/CVBS
Y/C INFO
CVBS
C/CVBS
CLOCHE
R-Y
B-Y
12VB
12VD
H61
E49
E48
E46
E170
E171
E51
E50
H70
H71
H64
H60
H72
PIP
263
262
E47
E52
E55
E54
E53
H58
E56
C40
C41
C42
C44
F57
H69
H62
H59
C39
C37
C38
H65
H67
H68
H66
TR1# BC857B
TR2# BC857B
TR3# BC847B
TR4# BC857B
TR5# BC857B
TR6# BC847B
TR7# BC857B
TR8# BC847B
TR15# BC847C
TR16# BC847C
TR35 BC337C-40
TR36# BC848C
TR29# BC857B
TR27 BC547C
TR26 BC547C
TR25 BC547C
TR22# BC857B
TR23# BC857B
TR32# BC847C
TR30# BC847C
TR31# BC847C

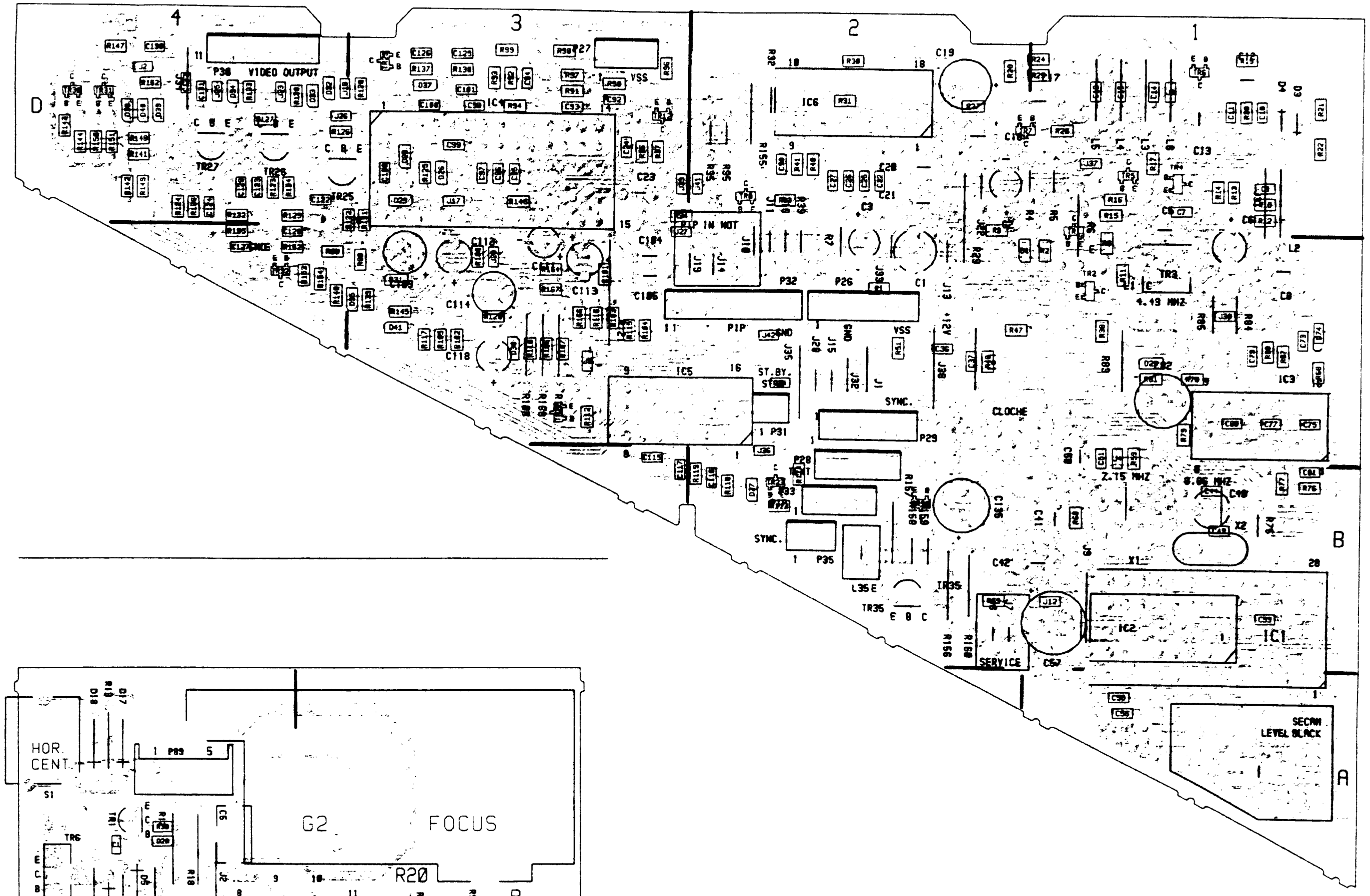
PCB 41


4
3
2
1
D
C
B
A
P30 VIDEO OUTPUT
TR27
TR26
TR25
IC4
VSS
IC6
C19
PIP IN NOT
P32
P26
PIP
GND
VSS
IC5
SYNC.
P29
P31
TEXT
CLOCHE
IC3
7.15 MHZ
8.86 MHZ
X1
X2
IC1
P35
L35
TR35
E B C
SERVICE
SECAM
LEVEL BLACK
C61
L25
+12V

OSCILLOSCOPE PICTURES
FOR PCB 41
PAL/SECAM/NTSC DECODER

④ x=20µS/div y=0.5V/div
⑤ x=20µS/div y=0.1V/div
⑥ x=20µS/div y=0.1V/div
⑦ x=20µS/div y=0.2V/div
⑧ x=20µS/div y=0.2V/div
⑨ x=20µS/div y=0.5V/div
⑩ x=20µS/div y=0.1V/div
⑪ x=20µS/div y=0.5V/div
⑫ x=20µS/div y=0.5V/div
⑬ x=20µS/div y=0.5V/div
⑭ x=20µS/div y=2V/div

PCB 39


4
3
2
1
D
B
A
VIDEO OUTPUT
P38
VSS
TR27
TR26
TR25
C.B.E
IC4
IC6
IC5
IC3
IC2
IC1
PIP IN NOT
P32
P26
PIP
GND
ST.BY.
SYNC.
CLOCHE
P29
P31
P35
P28
TR35
L35
4.43 MHZ
7.15 MHZ
8.86 MHZ
X1
X2
SERVICE
SECAM
LEVEL BLACK
C19
C114
C113
C118
C104
C106
C136
C42
C57

PCB 3

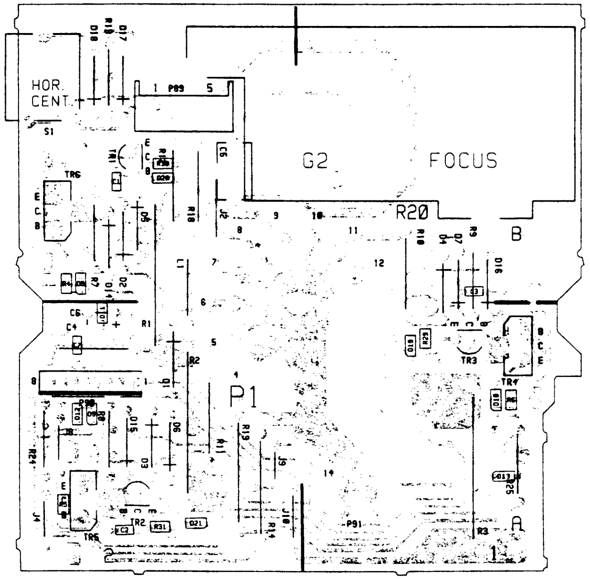

HOR.
CENT.
S1
P89
1
5
G2
FOCUS
R20
B
P1
A
TR1
TR2
TR3
TR4
TR5
TR6
IC5
J4
J9
P91

DIAGRAM B PAL DECODER

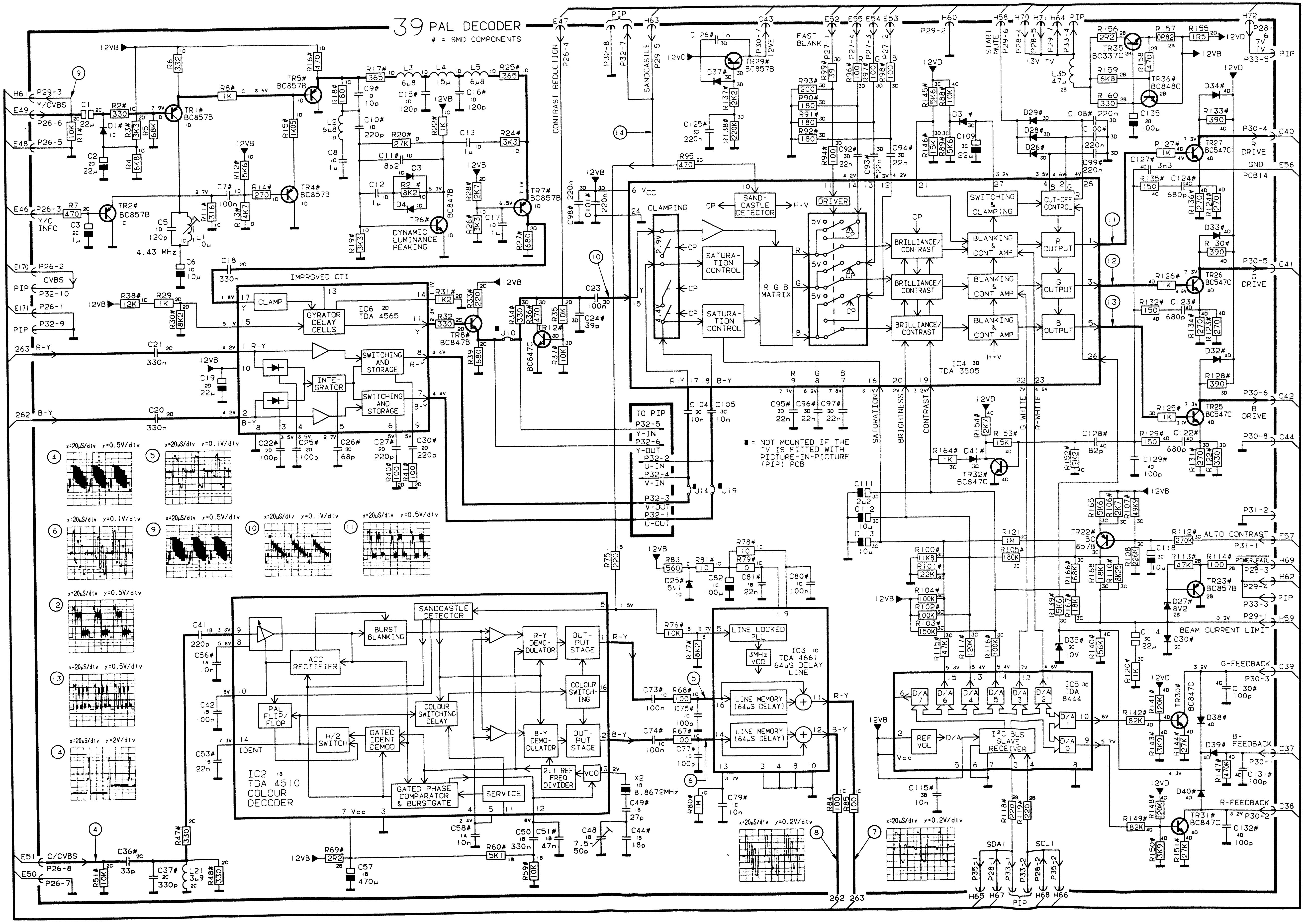

39 PAL DECODER
# = SMD COMPONENTS
IMPROVED CTI
IC6 TDA 4565
CLAMP
GYRATOR DELAY CELLS
INTE-GRATOR
SWITCHING AND STORAGE
IC2 TDA 4510 COLOUR DECODER
BURST BLANKING
SANDCASTLE DETECTOR
ACC RECTIFIER
PAL FLIP/FLOP
H/2 SWITCH
GATED IDENT DEMOD
COLOUR SWITCHING DELAY
GATED PHASE COMPARATOR & BURSTGATE
SERVICE
2:1 REF FREQ DIVIDER
VCO
R-Y DEMO-DULATOR
B-Y DEMO-DULATOR
OUT-PUT STAGE
COLOUR SWITCH-ING
IC3 TDA 4661 64μS DELAY LINE
LINE LOCKED PLL
3MHz VCC
LINE MEMORY (64μS DELAY)
IC4 TDA 3505
CLAMPING
SAND-CASTLE DETECTOR
DRIVER
SATURA-TION CONTROL
R G B MATRIX
BRILLIANCE/CONTRAST
BLANKING & CONT AMP
SWITCHING & CLAMPING
CUT-OFF CONTROL
R OUTPUT
G OUTPUT
B OUTPUT
IC5 TDA 8444
REF VOL
I²C BUS SLAVE RECEIVER
D/A
TO PIP
■ = NOT MOUNTED IF THE TV IS FITTED WITH PICTURE-IN-PICTURE (PIP) PCB
DYNAMIC LUMINANCE PEAKING
4.43 MHz
8.8672MHz
CONTRAST REDUCTION
SANDCASTLE
FAST BLANK
START MUTE
SATURATION
BRIGHTNESS
CONTRAST
G-WHITE
R-WHITE
R DRIVE
G DRIVE
B DRIVE
AUTO CONTRAST
POWER FAIL
BEAM CURRENT LIMIT
G-FEEDBACK
B-FEEDBACK
R-FEEDBACK
SDA1
SCL1
Y/CVBS
Y/C INFO
CVBS
C/CVBS
IDENT
x=20μS/div y=0.5V/div
x=20μS/div y=0.1V/div
x=20μS/div y=2V/div
x=20μS/div y=0.2V/div
12VB
12VD
TR1# BC857B
TR2# BC857B
TR4# BC857B
TR5# BC857B
TR6# BC847B
TR7# BC857B
TR8# BC847B
TR12# BC847C
TR22# BC857B
TR23# BC857B
TR25 BC547C
TR26 BC547C
TR27 BC547C
TR29# BC857B
TR30# BC847C
TR31# BC847C
TR32# BC847C
TR35 BC337C
TR36# BC848C
H61
E49
E48
E46
E170
E171
E51
E50
E47
H63
E43
E52
E55
E54
E53
H60
H58
H72
H7
H64
C40
E56
C41
C42
C44
F57
H69
H62
H59
C39
C37
C38
H65
H67
H68
H66
262
263
PIP
PCB14

DIAGRAM C VIDEO OUTPUT & SOUND OUTPUT
PCB DRAWING FOR PCB 3 SEE PAGE 2-13

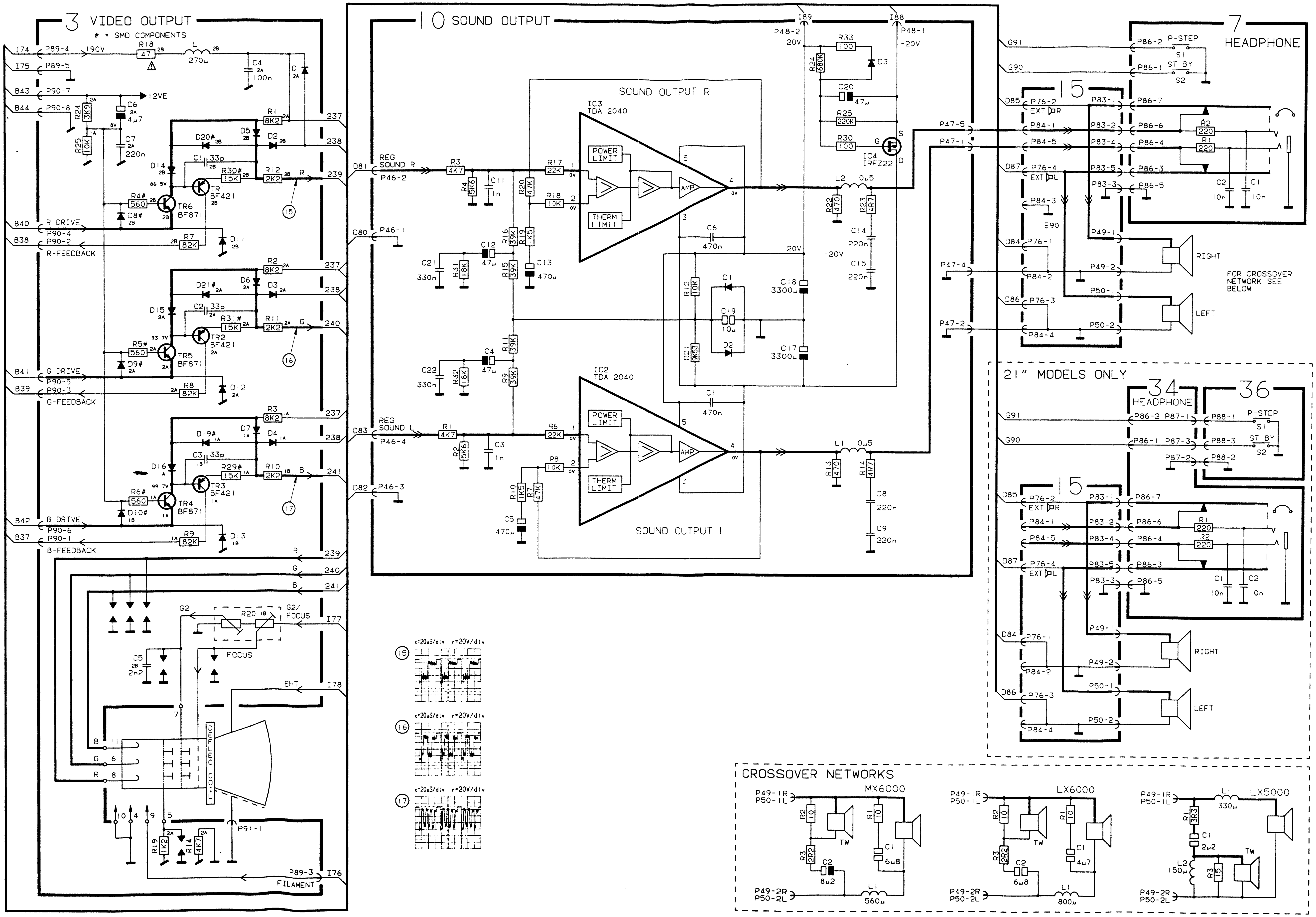

3 VIDEO OUTPUT
# = SMD COMPONENTS
I74
I75
B43
B44
P89-4
P89-5
P90-7
P90-8
190V
R18 47
L1 270µ
C4 100n
D1
12VE
R24 3K9
R25 10K
C6 4µ7
C7 220n
R1 8K2
R2 8K2
R3 8K2
D5
D2
D20#
C1 33p
R30# 15K
R12 2K2
D14
R4# 560
TR6 BF871
TR1 BF421
D8#
R DRIVE
R-FEEDBACK
P90-4
P90-2
R7 82K
D11
B40
B38
D6
D3
D21#
C2 33p
R31# 15K
R11 2K2
D15
R5# 560
TR5 BF871
TR2 BF421
D9#
G DRIVE
G-FEEDBACK
P90-5
P90-3
R8 82K
D12
B41
B39
D7
D4
D19#
C3 33p
R29# 15K
R10 2K2
D16
R6# 560
TR4 BF871
TR3 BF421
D10#
B DRIVE
B-FEEDBACK
P90-6
P90-1
R9 82K
D13
B42
B37
237
238
239
240
241
R
G
B
⑮
⑯
⑰
G2
R20
G2/ FOCUS
FOCUS
I77
C5 2n2
EHT
I78
P91-1
R19 1K2
R14 4K7
P89-3
FILAMENT
I76
10 SOUND OUTPUT
I89
I88
P48-2
P48-1
20V
-20V
R33 100
R24 680K
D3
C20 47µ
R25 220K
R30 100
IC4 IRFZ22
G
S
D
SOUND OUTPUT R
IC3 TDA 2040
POWER LIMIT
THERM LIMIT
AMP
D81
REG SOUND R
P46-2
R3 4K7
R4 5K6
C11 1n
R17 22K
R20 47K
R18 10K
R16 39K
R19 1K5
C12 47µ
C13 470µ
C21 330n
R31 18K
R15 39K
D80
P46-1
L2 0µ5
R22 470
R23 4R7
C14 220n
C15 220n
C6 470n
R12 10K
D1
C19 10µ
R21 9K53
D2
C18 3300µ
C17 3300µ
R11 39K
C4 47µ
C22 330n
R32 18K
R9 39K
IC2 TDA 2040
C1 470n
D83
REG SOUND L
P46-4
R1 4K7
R2 5K6
C3 1n
R6 22K
R8 10K
R10 1K5
R7 47K
C5 470µ
D82
P46-3
SOUND OUTPUT L
L1 0µ5
R13 470
R14 4R7
C8 220n
C9 220n
P47-5
P47-1
P47-4
P47-2
x=20µS/div y=20V/div
G91
G90
D85
D87
D84
D86
P76-2
EXT ⊐R
P76-4
EXT ⊐L
P76-1
P76-3
P84-1
P84-5
P84-3
P84-2
P84-4
E90
15
P83-1
P83-2
P83-4
P83-5
P83-3
P49-1
P49-2
P50-1
P50-2
7 HEADPHONE
P86-2
P86-1
P-STEP
S1
ST BY
S2
P86-7
P86-6
P86-4
P86-3
P86-5
R2 220
R1 220
C2 10n
C1 10n
RIGHT
LEFT
FOR CROSSOVER NETWORK SEE BELOW
21" MODELS ONLY
34 HEADPHONE
36
P87-1
P87-3
P87-2
P88-1
P88-3
P88-2
CROSSOVER NETWORKS
MX6000
LX6000
LX5000
P49-1R
P50-1L
P49-2R
P50-2L
R2 10
R3 2R2
C2 8µ2
R1 10
C1 6µ8
L1 560µ
TW
C2 6µ8
C1 4µ7
L1 800µ
L1 330µ
R1 3R3
C1 2µ2
L2 150µ
R3 15

DIAGRAM D SOUND SWITCHING & CONTROL

PCB DRAWING SEE PAGE 2-18

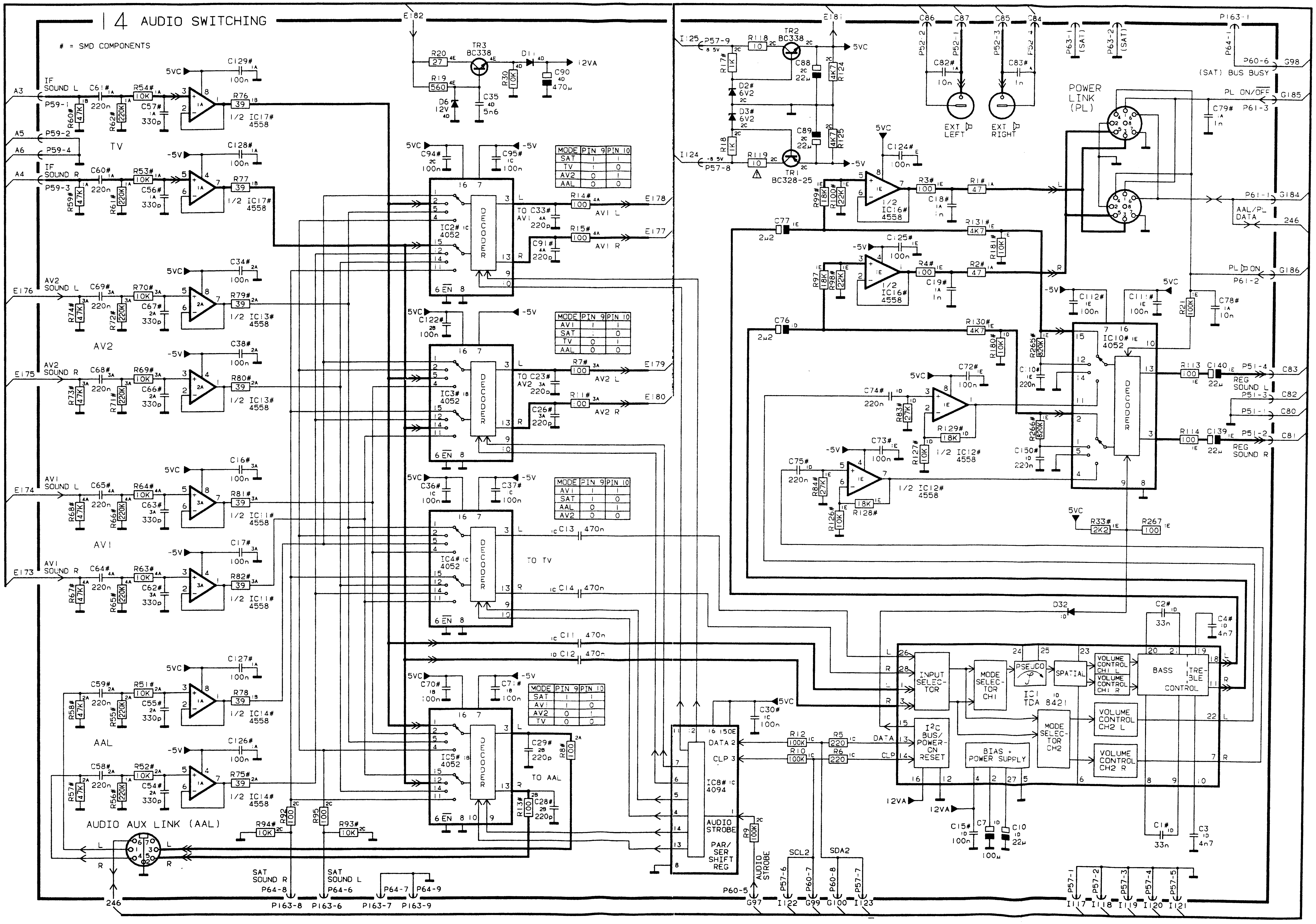
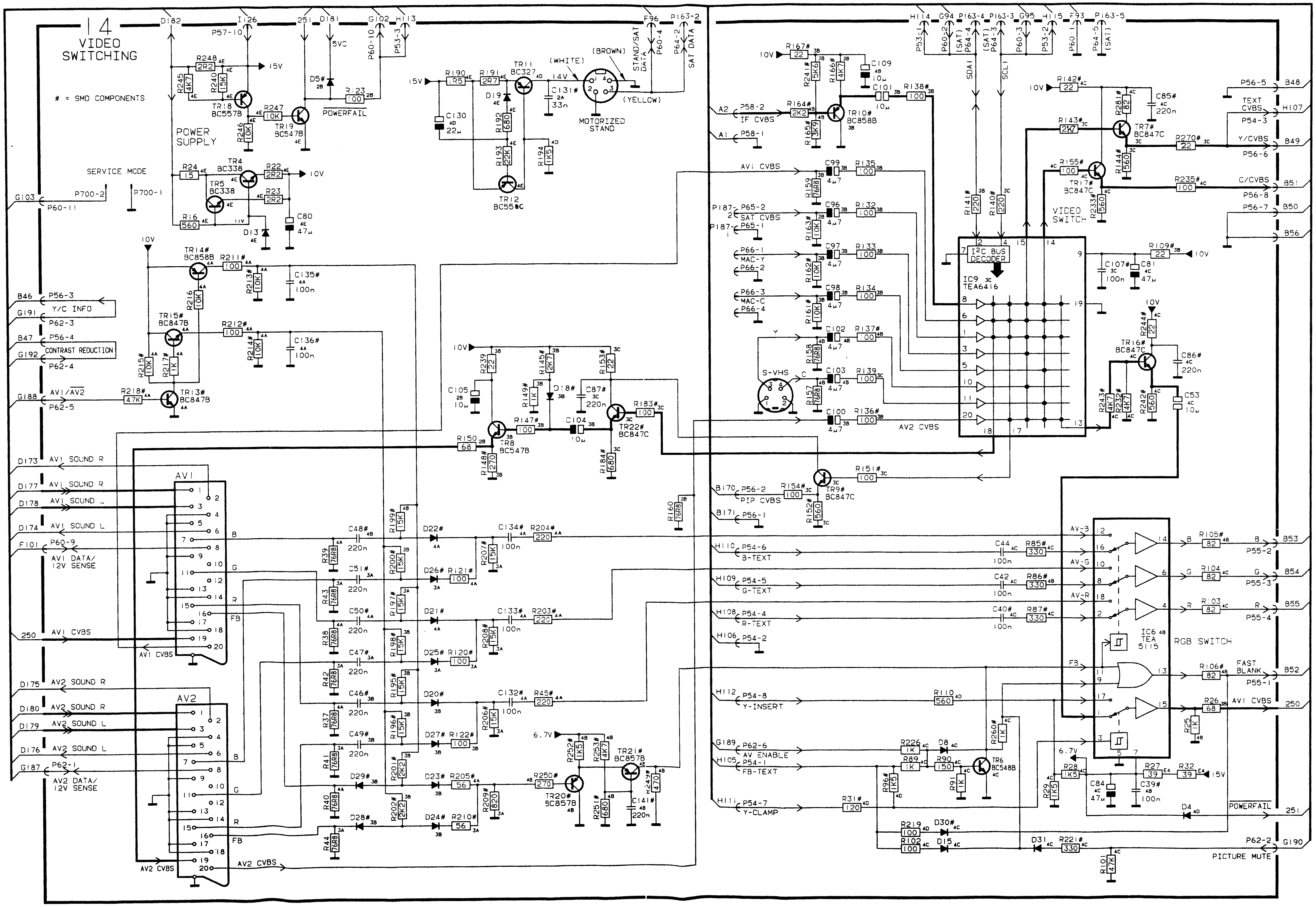

14 AUDIO SWITCHING
# = SMD COMPONENTS
IF SOUND L
IF SOUND R
TV
AV2 SOUND L
AV2 SOUND R
AV2
AV1 SOUND L
AV1 SOUND R
AV1
AAL
AUDIO AUX LINK (AAL)
1/2 IC17# 4558
1/2 IC13# 4558
1/2 IC11# 4558
1/2 IC14# 4558
IC2# 4052
IC3# 4052
IC4# 4052
IC5# 4052
DECODER
MODE | PIN 9 | PIN 10
SAT | 1 | 1
TV | 1 | 0
AV2 | 0 | 1
AAL | 0 | 0
MODE | PIN 9 | PIN 10
AV1 | 1 | 1
SAT | 1 | 0
TV | 0 | 1
AAL | 0 | 0
MODE | PIN 9 | PIN 10
AV1 | 1 | 1
SAT | 1 | 0
AAL | 0 | 1
AV2 | 0 | 0
MODE | PIN 9 | PIN 10
SAT | 1 | 1
AV1 | 1 | 0
AV2 | 0 | 1
TV | 0 | 0
TO C33# AV1
AV1 L
AV1 R
TO C23# AV2
AV2 L
AV2 R
TO TV
TO AAL
TR3 BC338
TR2 BC338
TR1 BC328-25
D1
12VA
5VC
-5V
SAT SOUND R
SAT SOUND L
IC8# 4094
DATA 2
CLP 3
AUDIO STROBE
PAR/SER SHIFT REG
AUDIO STROBE
SCL2
SDA2
EXT LEFT
EXT RIGHT
POWER LINK (PL)
(SAT) BUS BUSY
PL ON/OFF
AAL/PL DATA
PL ON
1/2 IC16# 4558
1/2 IC12# 4558
IC10# 4052
DECODER
REG SOUND L
REG SOUND R
D32
INPUT SELECTOR
MODE SELECTOR CH1
PSEUDO
SPATIAL
VOLUME CONTROL CH1 L
VOLUME CONTROL CH1 R
BASS TREBLE CONTROL
I²C BUS/POWER-ON RESET
BIAS + POWER SUPPLY
MODE SELECTOR CH2
VOLUME CONTROL CH2 L
VOLUME CONTROL CH2 R
IC1 TDA 8421
DATA
CLP
E182
E181
E178
E177
E179
E180
E176
E175
E174
E173
246
P163-8
P163-6
P163-7
P163-9
G97
I122
G99
G100
I123
I117
I118
I119
I120
I121
G98
G185
G184
G186
C83
C82
C80
C81

DIAGRAM E VIDEO SWITCHING
PCB DRAWING SEE PAGE 2-18


14
VIDEO
SWITCHING
# = SMD COMPONENTS
POWER
SUPPLY
SERVICE MODE
P700-2
P700-1
G103
P60-11
TR18
BC557B
TR19
BC547B
TR4
BC338
TR5
BC338
TR14#
BC858B
TR15#
BC847B
TR13#
BC847B
15V
10V
5VC
POWERFAIL
TR11
BC327
TR12
BC550C
(WHITE)
(BROWN)
(YELLOW)
MOTORIZED
STAND
STAND/SAT
DATA
SAT DATA
B46
P56-3
Y/C INFO
G191
P62-3
B47
P56-4
CONTRAST REDUCTION
G192
P62-4
G188
AV1/AV2
P62-5
D173
AV1 SOUND R
D177
D178
AV1 SOUND L
D174
F101
P60-9
AV1 DATA/
12V SENSE
250
AV1 CVBS
AV1
AV1 CVBS
D175
AV2 SOUND R
D180
D179
AV2 SOUND L
D176
G187
P62-1
AV2 DATA/
12V SENSE
AV2
AV2 CVBS
TR8
BC547B
TR22#
BC847C
TR20#
BC857B
TR21#
BC857B
6.7V
A2
P58-2
IF CVBS
A1
P58-1
TR10#
BC858B
AV1 CVBS
P187
P65-2
SAT CVBS
P65-1
P66-1
MAC-Y
P66-2
P66-3
MAC-C
P66-4
S-VHS
AV2 CVBS
IC9
TEA6416
I2C BUS
DECODER
VIDEO
SWITCH
SDA1
SCL1
TR7#
BC847C
TR17#
BC847C
TR16#
BC847C
P56-5
B48
TEXT
CVBS
H107
P54-3
Y/CVBS
B49
P56-6
C/CVBS
B51
P56-8
P56-7
B50
B56
B170
P56-2
PIP CVBS
TR9#
BC847C
B171
P56-1
H110
P54-6
B-TEXT
H109
P54-5
G-TEXT
H108
P54-4
R-TEXT
H106
P54-2
H112
P54-8
Y-INSERT
G189
P62-6
AV ENABLE
H105
P54-1
FB-TEXT
H111
P54-7
Y-CLAMP
TR6
BC548B
IC6
TEA
5115
RGB SWITCH
B53
P55-2
B54
P55-3
B55
P55-4
FAST
BLANK
B52
P55-1
AV1 CVBS
250
POWERFAIL
251
P62-2
G190
PICTURE MUTE

2-18
PCB DRAWING

PCB 14

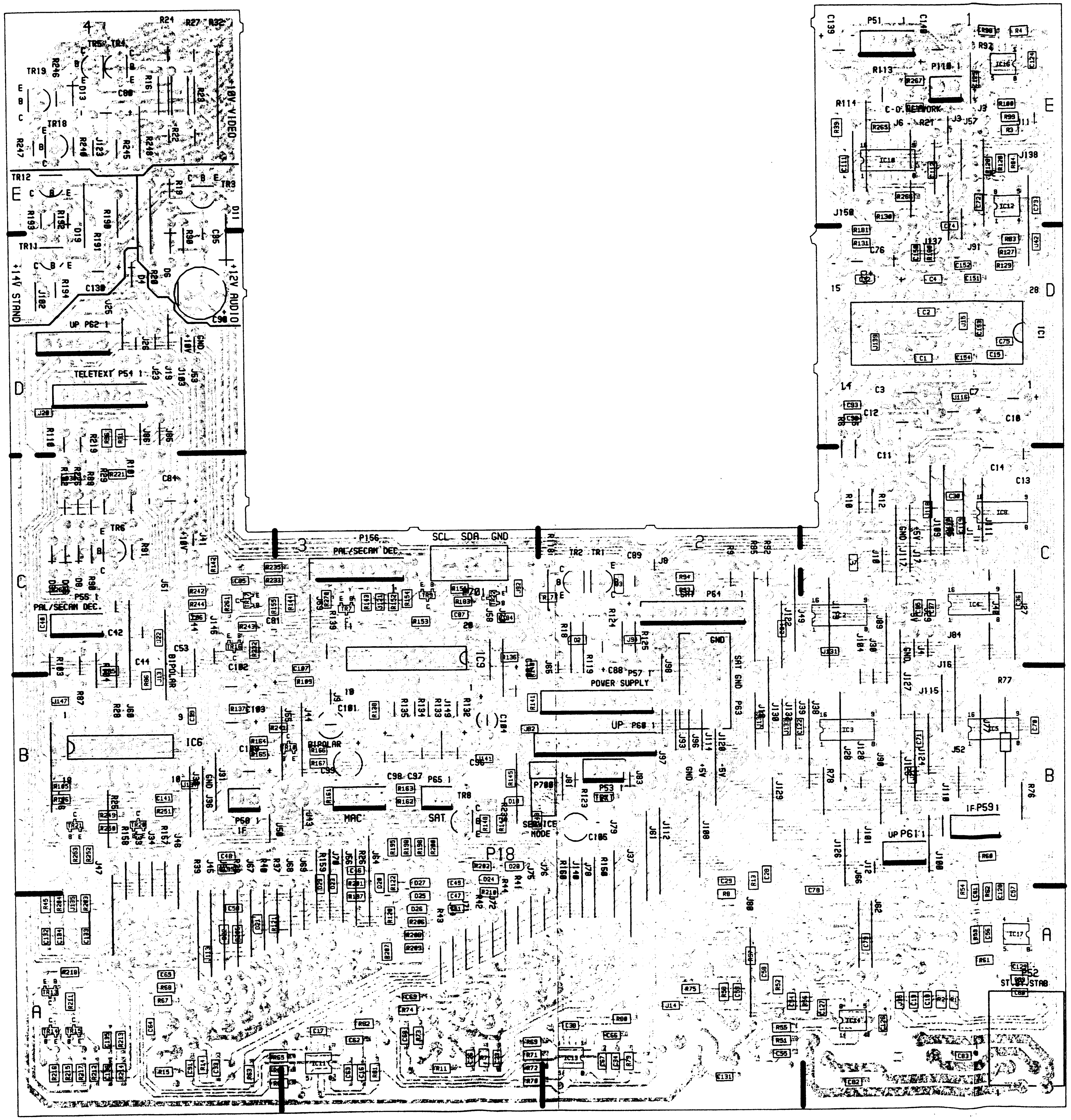

+10V VIDEO
+12V AUDIO
+14V STAND
UP P62
TELETEXT P54
P55 PAL/SECAM DEC.
P156 PAL/SECAM DEC.
SCL SDA GND
POWER SUPPLY
UP P60
P53
SAT GND
IC6
IC9
MAC
SAT
P65
P59 IF
SERVICE MODE
P18
P51
C-O NETWORK
IC1
IF P59
UP P61
IC17
P52
ST STAB
1
2
3
4
A
B
C
D
E

DIAGRAM F IR TRANSCEIVER AND 5V ST BY SUPPLY
PCB DRAWINGS FOR PCB6 AND PCB9 SEE PAGE 2-22

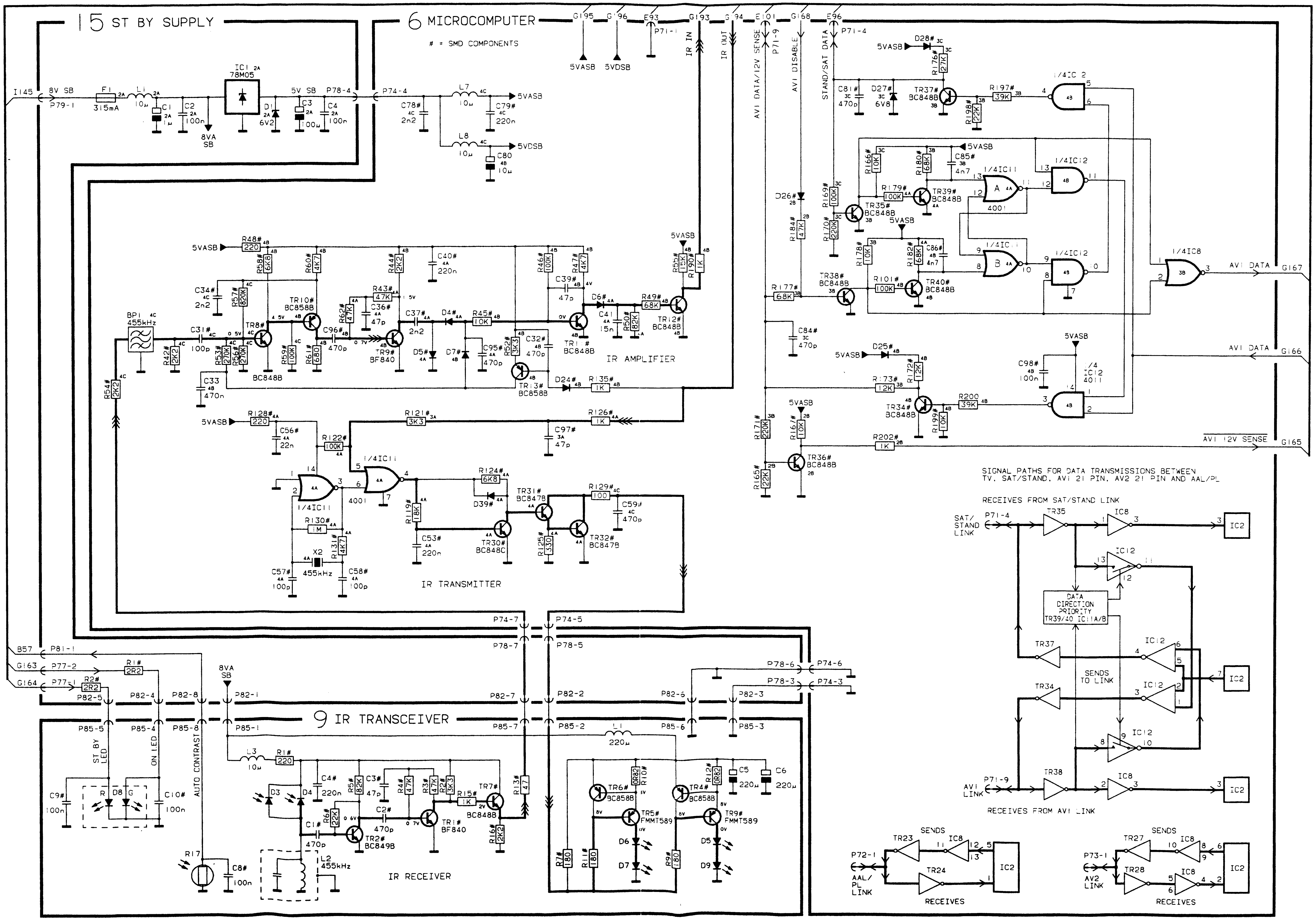

15 ST BY SUPPLY
6 MICROCOMPUTER
# = SMD COMPONENTS
9 IR TRANSCEIVER
IR AMPLIFIER
IR TRANSMITTER
IR RECEIVER
I145
8V SB
P79-1
F1 315mA
L1 10μ
C1 1μ
C2 100n
8VA SB
IC1 78M05
D1 6V2
5V SB
C3 100μ
C4 100n
P78-4
P74-4
C78# 2n2
L7 10μ
C79# 220n
5VASB
L8 10μ
C80 10μ
5VDSB
G195
G196
E93
G193
G194
E101
G168
E96
P71-1
P71-9
P71-4
IR IN
IR OUT
AV1 DATA/12V SENSE
AV1 DISABLE
STAND/SAT DATA
BP1 455kHz
R48# 220
R58# 6K8
R60# 4K7
R44# 2K2
C40# 220n
R46# 100K
R47# 4K7
C34# 2n2
R57# 820K
TR10# BC858B
TR8# BC848B
C31# 100p
R42# 2K2
R53# 270K
R56# 270K
R59# 100K
R61# 680
C96# 470p
R62# 47K
R43# 47K
C36# 47p
C37# 2n2
TR9# BF840
D4#
D5#
D7#
R45# 10K
C95# 470p
R52# 3K3
C32# 470p
TR13# BC858B
C39# 47p
D6#
C41 15n
R50# 82K
R49# 68K
TR1# BC848B
TR12# BC848B
R55# 15K
R190# 1K
D24#
R135# 1K
R54# 2K2
C33 470n
R128# 220
C56# 22n
R121# 3K3
R126# 1K
C97# 47p
R122# 100K
1/4IC11
4001
R124# 6K8
D39#
TR31# BC847B
R129# 100
C59# 470p
R119# 18K
C53# 220n
TR30# BC848C
R125# 330
TR32# BC847B
R130# 1M
R131# 4K7
X2 455kHz
C57# 100p
C58# 100p
P74-7
P74-5
P78-7
P78-5
B57
P81-1
G163
P77-2
R1# 2R2
G164
P77-1
R2# 2R2
P82-5
P82-4
P82-8
P82-1
P82-7
P82-2
P82-6
P82-3
P78-6
P74-6
P78-3
P74-3
P85-5
P85-4
P85-8
P85-1
P85-7
P85-2
P85-6
P85-3
ST BY LED
ON LED
AUTO CONTRAST
C9# 100n
D8
C10# 100n
R17
C8# 100n
L3 10μ
R1# 220
D3
D4
C4# 220n
R5# 82K
C3# 47p
R4# 47K
R3# 47K
R2# 3K3
R15# 1K
TR7# BC848B
R13# 47
C1# 470p
R6# 22K
TR2# BC849B
C2# 470p
TR1# BF840
R16# 2K2
L2 455kHz
L1 220μ
TR6# BC858B
R10# 0R82
TR4# BC858B
R12# 0R82
C5 220μ
C6 220μ
TR5# FMMT589
TR9# FMMT589
R7# 180
R11# 180
R9# 180
D6
D7
D5
D9
D28#
R176# 27K
C81# 470p
D27# 6V8
TR37# BC848B
R198# 22K
R197# 39K
1/4IC2
R166# 10K
R180# 68K
C85# 4n7
R179# 100K
TR39# BC848B
TR35# BC848B
R169# 100K
R170# 220K
D26#
R184# 47K
1/4IC11
1/4IC12
R178# 10K
R182# 68K
C86# 4n7
R101# 100K
TR40# BC848B
R177# 68K
TR38# BC848B
1/4IC8
AV1 DATA
G167
G166
C84# 470p
D25#
R173# 12K
R172# 12K
C98# 100n
1/4 IC12 4011
TR34# BC848B
R199# 10K
R200 39K
R171# 220K
R16# 10K
R202# 1K
AV1 12V SENSE
G165
TR36# BC848B
R165# 22K
SIGNAL PATHS FOR DATA TRANSMISSIONS BETWEEN TV, SAT/STAND, AV1 21 PIN, AV2 21 PIN AND AAL/PL
RECEIVES FROM SAT/STAND LINK
SAT/STAND LINK
TR35
IC8
IC2
IC12
DATA DIRECTION PRIORITY TR39/40 IC11A/B
TR37
SENDS TO LINK
TR34
TR38
AV1 LINK
RECEIVES FROM AV1 LINK
SENDS
TR23
TR24
P72-1
AAL/PL LINK
RECEIVES
TR27
TR28
P73-1
AV2 LINK

DIAGRAM G MICROCOMPUTER
PCB DRAWING SEE PAGE 2-22

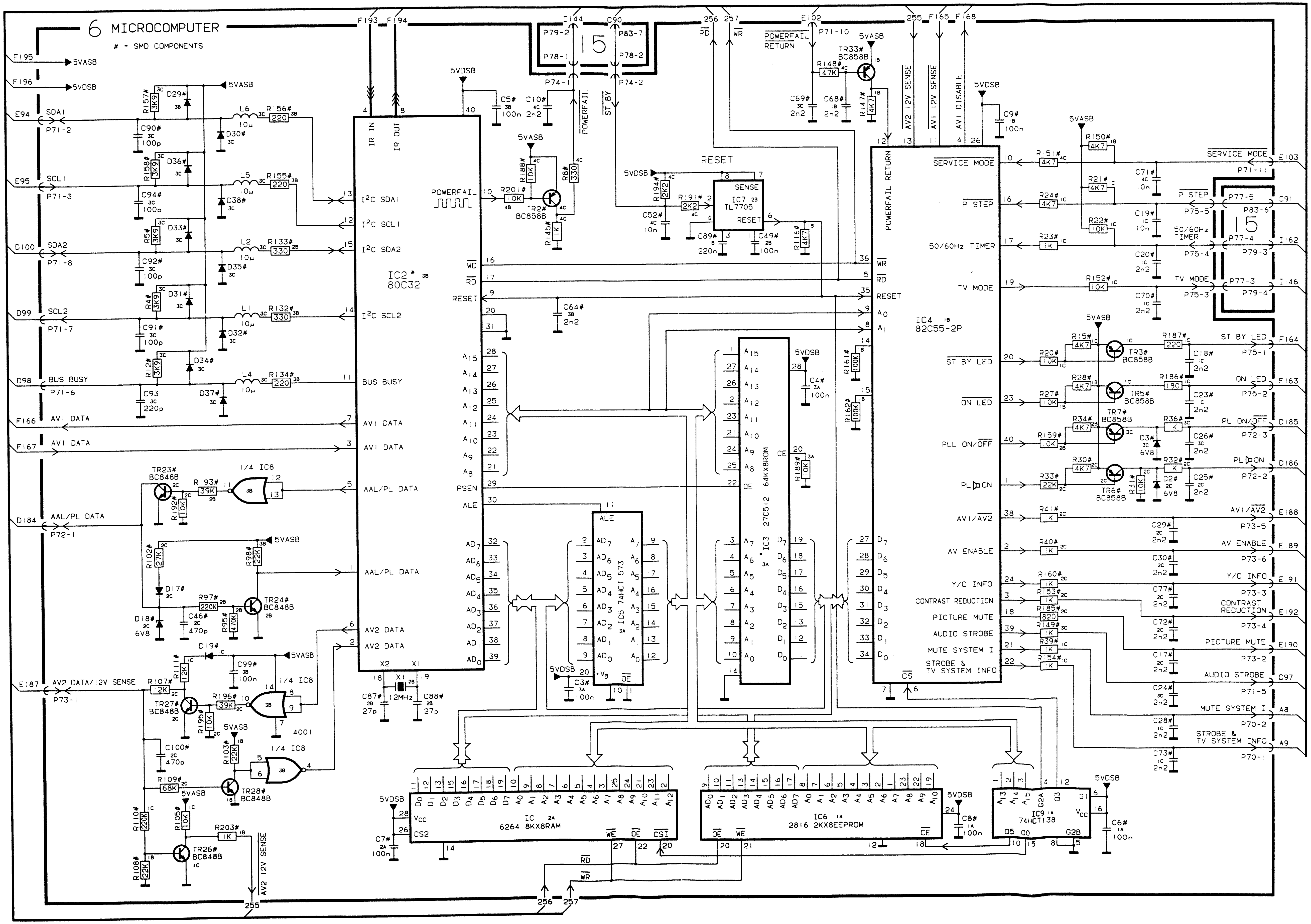
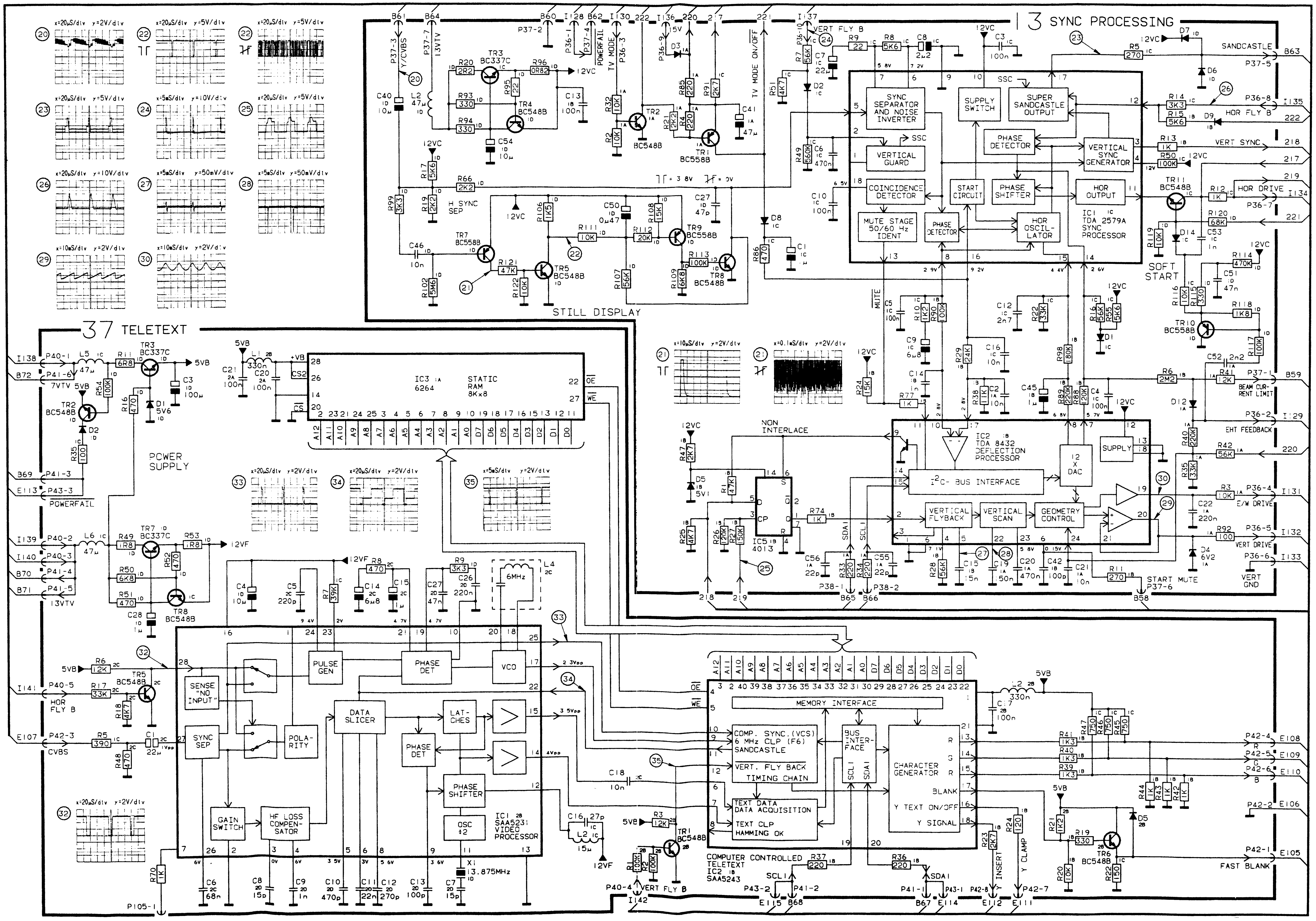
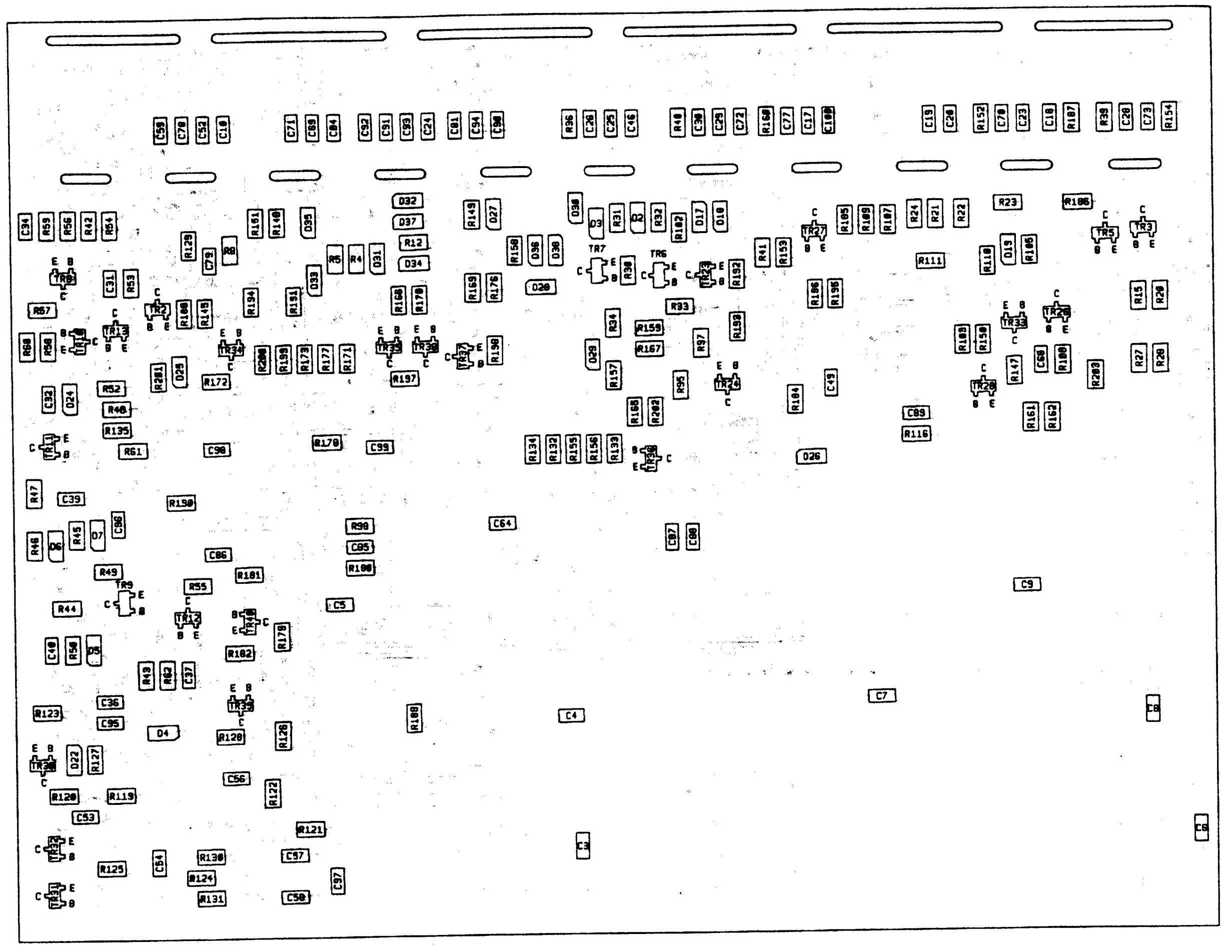
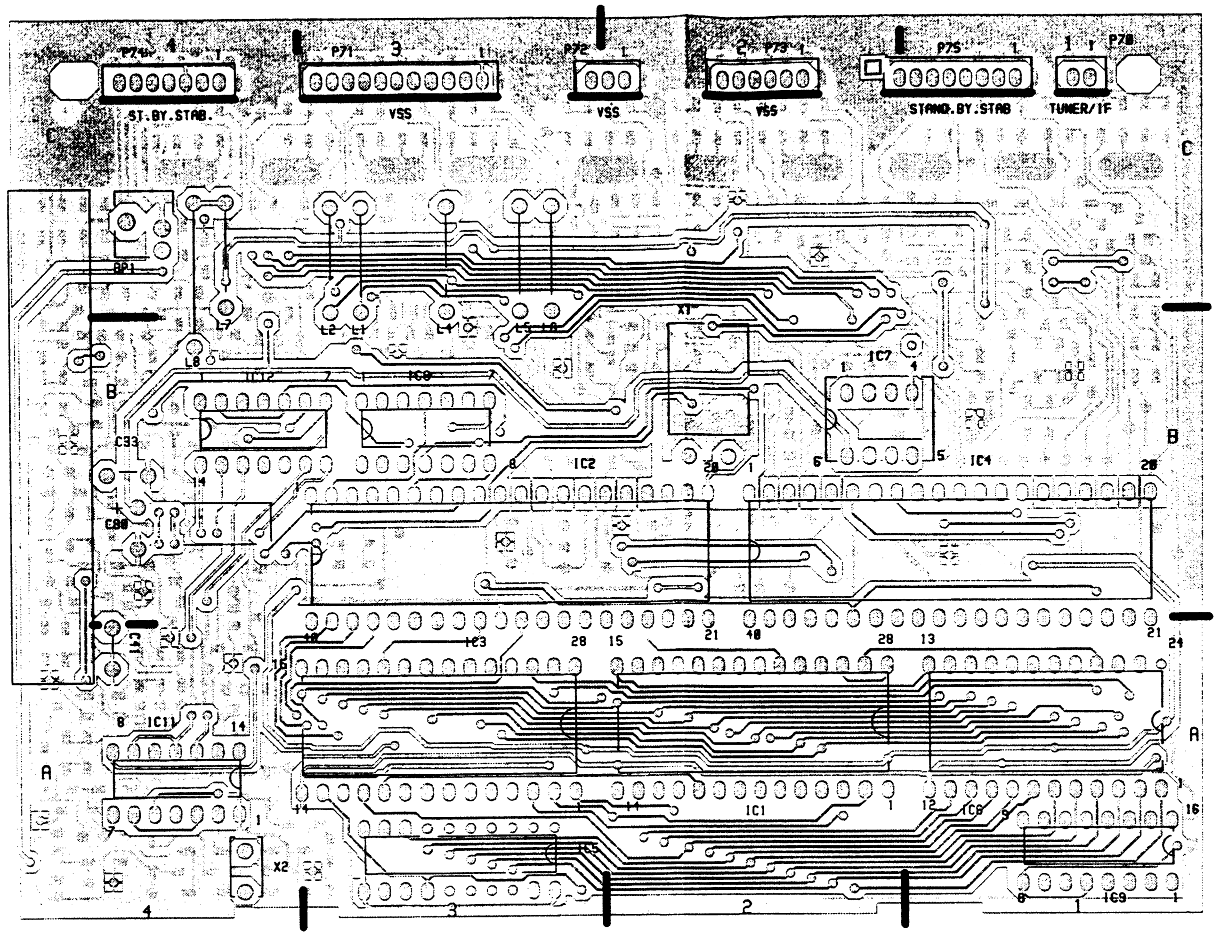

6 MICROCOMPUTER
# = SMD COMPONENTS
F195
5VASB
F196
5VDSB
E94
SDA1
P71-2
E95
SCL1
P71-3
D100
SDA2
P71-8
D99
SCL2
P71-7
D98
BUS BUSY
P71-6
F166
AV1 DATA
F167
AV1 DATA
D184
AAL/PL DATA
P72-1
E187
AV2 DATA/12V SENSE
P73-1
R157# 3K9
D29#
C90# 100p
L6 10µ
R156# 220
D30#
R158# 3K9
D36#
C94# 100p
L5 10µ
R155# 220
D38#
R5# 3K9
D33#
C92# 100p
L2 10µ
R133# 330
D35#
R4# 3K9
D31#
C91# 100p
L1 10µ
R132# 330
D32#
R12# 3K9
D34#
C93 220p
D37#
L4 10µ
R134# 220
TR23# BC848B
R193# 39K
R192# 10K
1/4 IC8
R102# 27K
R98# 22K
D17#
D18# 6V8
R97# 220K
C46# 470p
R95# 470K
TR24# BC848B
D19#
R111# 12K
R107# 12K
C99# 100n
1/4 IC8
TR27# BC848B
R196# 39K
R195# 10K
4001
C100# 470p
5VASB
R103# 22K
1/4 IC8
R109# 68K
TR28# BC848B
R110# 220K
R105# 10K
R203# 1K
TR26# BC848B
R108# 22K
AV2 12V SENSE
255
F193
F194
IR IN
IR OUT
I²C SDA1
I²C SCL1
I²C SDA2
I²C SCL2
BUS BUSY
AV1 DATA
AV1 DATA
AAL/PL DATA
AAL/PL DATA
AV2 DATA
AV2 DATA
POWERFAIL
WD
RD
RESET
IC2* 80C32
A15 A14 A13 A12 A11 A10 A9 A8
PSEN
ALE
AD7 AD6 AD5 AD4 AD3 AD2 AD1 AD0
X2 X1
X1 12MHz
C87# 27p
C88# 27p
5VDSB
C5# 100n
C10# 2n2
5VASB
R188# 10K
R201# 10K
R2# BC858B
R8# 330
R145# 1K
I144
C90
P79-2
P78-1
P74-1
15
P83-7
P78-2
P74-2
POWERFAIL
ST BY
C64# 2n2
256
257
RD
WR
E102
POWERFAIL RETURN
P71-10
5VASB
TR33# BC858B
R148# 47K
C69# 2n2
C68# 2n2
R147# 4K7
RESET
R194# 2K2
R191# 2K2
SENSE
IC7 TL7705
RESET
C52# 10n
C89# 220n
C49# 100n
R116# 4K7
ALE
IC5 74HC1 573
5VDSB
C3# 100n
OE
IC3 27C512 64KX8ROM
CE
5VDSB
C4# 100n
R189# 10K
R161# 100K
R162# 100K
255
F165
F168
AV2 12V SENSE
AV1 12V SENSE
AV1 DISABLE
5VDSB
C9# 100n
POWERFAIL RETURN
WR
RD
RESET
A0
A1
IC4 82C55-2P
D7 D6 D5 D4 D3 D2 D1 D0
CS
SERVICE MODE
P STEP
50/60Hz TIMER
TV MODE
ST BY LED
ON LED
PLL ON/OFF
PL ON
AV1/AV2
AV ENABLE
Y/C INFO
CONTRAST REDUCTION
PICTURE MUTE
AUDIO STROBE
MUTE SYSTEM I
STROBE & TV SYSTEM INFO
5VASB
R51# 4K7
R150# 4K7
R21# 4K7
R24# 4K7
R22# 10K
R23# 1K
R152# 10K
C71# 10n
C19# 10n
C20# 2n2
C70# 2n2
R15# 4K7
R20# 10K
TR3# BC858B
R187# 220
C18# 2n2
R28# 4K7
R27# 10K
TR5# BC858B
R186# 180
C23# 2n2
R34# 4K7
TR7# BC858B
R36# 1K
R159# 10K
D3# 6V8
C26# 2n2
R30# 4K7
R33# 22K
TR6# BC858B
R31# 10K
R32# 1K
D2# 6V8
C25# 2n2
R41# 1K
R40# 1K
R160# 1K
R153# 1K
R185# 820
R149# 1K
R39# 1K
R54# 1K
C29# 2n2
C30# 2n2
C77# 2n2
C72# 2n2
C17# 2n2
C24# 2n2
C28# 2n2
C73# 2n2
SERVICE MODE
P71-11
E103
P STEP
P75-5
P77-5
P83-6
C91
15
50/60Hz TIMER
P75-4
P77-4
P79-3
I162
TV MODE
P75-3
P77-3
P79-4
I146
ST BY LED
P75-1
F164
ON LED
P75-2
F163
PL ON/OFF
P72-3
C185
PL ON
P72-2
D186
AV1/AV2
P73-5
E188
AV ENABLE
P73-6
E89
Y/C INFO
P73-3
E191
CONTRAST REDUCTION
P73-4
E192
PICTURE MUTE
P73-2
E190
AUDIO STROBE
P71-5
C97
MUTE SYSTEM I
P70-2
A8
STROBE & TV SYSTEM INFO
P70-1
A9
5VDSB
D0 D1 D2 D3 D4 D5 D6 D7
A0 A1 A2 A3 A4 A5 A6 A7 A8 A9 A10 A11 A12
VCC
CS2
IC1 6264 8KX8RAM
WE OE CS1
C7# 100n
AD0 AD1 AD2 AD3 AD4 AD5 AD6 AD7
A0 A1 A2 A3 A4 A5 A6 A7 A8 A9 A10
IC6 2816 2KX8EEPROM
OE WE CE
5VDSB
C8# 100n
A13 A14 A15 G2A Q3 G1
VCC
IC9 74HCT138
Q5 Q0 G2B
5VDSB
C6# 100n
RD
WR
256
257

DIAGRAM H TELETEXT AND SYNC PROCESSING

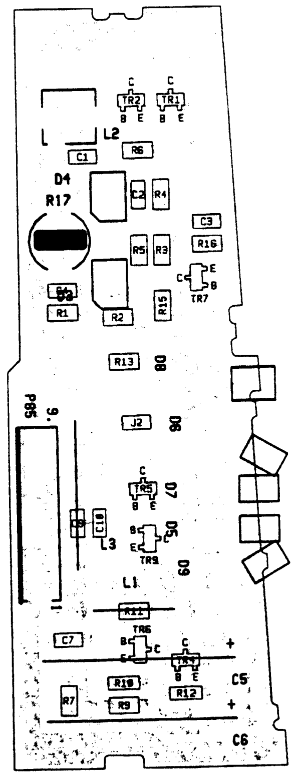

13 SYNC PROCESSING
37 TELETEXT
STILL DISPLAY
POWER SUPPLY
SYNC SEPARATOR AND NOISE INVERTER
VERTICAL GUARD
COINCIDENCE DETECTOR
MUTE STAGE 50/60 Hz IDENT
PHASE DETECTOR
START CIRCUIT
PHASE SHIFTER
HOR OSCIL-LATOR
HOR OUTPUT
VERTICAL SYNC GENERATOR
SUPPLY SWITCH
SUPER SANDCASTLE OUTPUT
IC1 TDA 2579A SYNC PROCESSOR
IC2 TDA 8432 DEFLECTION PROCESSOR
I²C- BUS INTERFACE
12 X DAC
SUPPLY
VERTICAL FLYBACK
VERTICAL SCAN
GEOMETRY CONTROL
IC5 4013
NON INTERLACE
SANDCASTLE
HOR FLY B
VERT SYNC
HOR DRIVE
SOFT START
BEAM CUR-RENT LIMIT
EHT FEEDBACK
E/W DRIVE
VERT DRIVE
VERT GND
START MUTE
VERT FLY B
Y/CVBS
13VTV
POWERFAIL
TV MODE
TV MODE ON/OFF
H SYNC SEP
MUTE
IC3 6264 STATIC RAM 8Kx8
SENSE "NO INPUT"
SYNC SEP
POLA-RITY
PULSE GEN
PHASE DET
VCO
DATA SLICER
LAT-CHES
PHASE SHIFTER
GAIN SWITCH
HF LOSS COMPEN-SATOR
OSC ÷2
IC1 SAA5231 VIDEO PROCESSOR
X1 13.875MHz
6MHz
MEMORY INTERFACE
COMP. SYNC.(VCS) 6 MHz CLP (F6) SANDCASTLE
VERT. FLY BACK TIMING CHAIN
TEXT DATA DATA ACQUISITION
TEXT CLP HAMMING OK
BUS INTER-FACE
SCL1 SDA1
CHARACTER GENERATOR
BLANK
Y TEXT ON/OFF
Y SIGNAL
COMPUTER CONTROLLED TELETEXT IC2 SAA5243
INSERT
Y CLAMP
FAST BLANK
CVBS
HOR FLY B
5VB
12VC
12VF
7VTV
13VTV
x=20µS/div y=2V/div
x=20µS/div y=5V/div
x=20µS/div y=10V/div
x=5mS/div y=10V/div
x=5mS/div y=50mV/div
x=10mS/div y=2V/div
x=10µS/div y=2V/div
x=0.1mS/div y=2V/div
x=5mS/div y=2V/div

PCB 6




P74
P71
P72
P73
P75
P76
ST.BY.STAB.
VSS
VSS
VSS
STAND.BY.STAB
TUNER/IF
IC1
IC2
IC3
IC4
IC5
IC6
IC7
IC8
IC9
IC11
IC12
X1
X2
A
B
C

PCB 9


TR1
TR2
L2
D4
R17
TR7
P85
L3
L1
TR6
C5
C6

OSCILLOSCOPE PICTURES FOR POWER SUPPLY & DEFLECTION PCB4

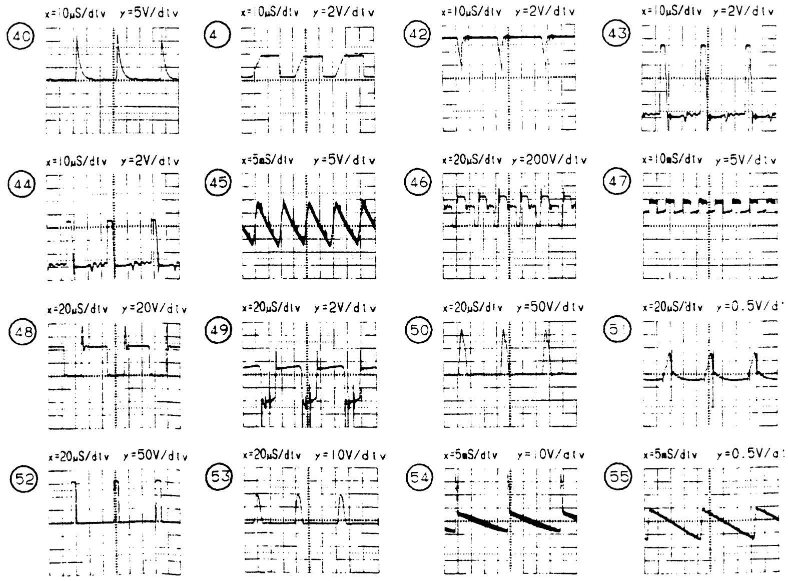


DIAGRAM I POWER SUPPLY & DEFLECTION (○ = FOR OSCILLOSCOPE PICTURES SEE PAGE 2-22)

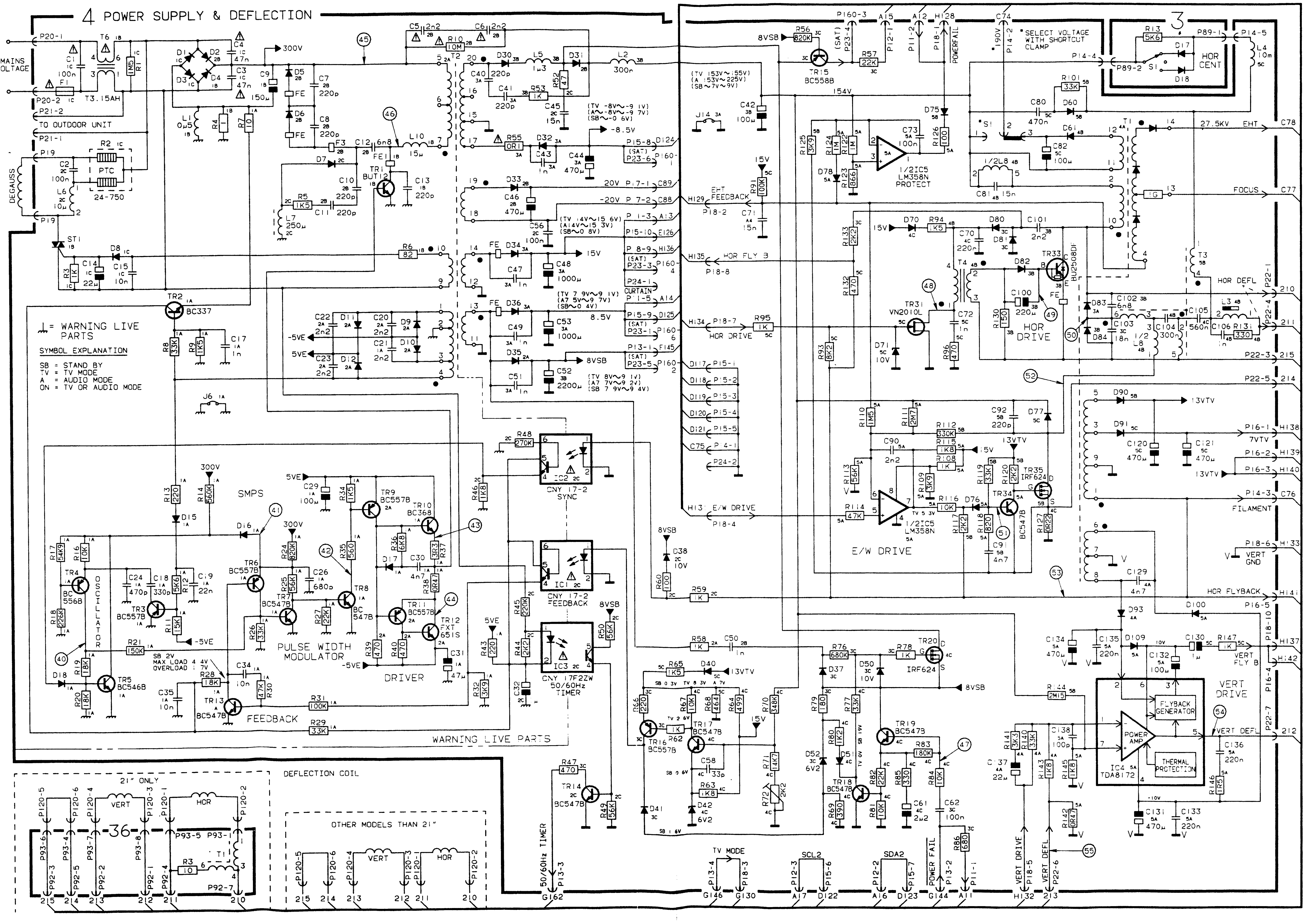

4 POWER SUPPLY & DEFLECTION
3
MAINS VOLTAGE
DEGAUSS
TO OUTDOOR UNIT
PTC
24-750
T3.15AH
300V
BUT12
BC337
WARNING LIVE PARTS
SYMBOL EXPLANATION
SB = STAND BY
TV = TV MODE
A = AUDIO MODE
ON = TV OR AUDIO MODE
SMPS
OSCILLATOR
PULSE WIDTH MODULATOR
DRIVER
FEEDBACK
CNY 17-2 SYNC
CNY 17-2 FEEDBACK
CNY 17F2ZW 50/60Hz TIMER
WARNING LIVE PARTS
DEFLECTION COIL
21" ONLY
OTHER MODELS THAN 21"
VERT
HOR
8VSB
15V
-8.5V
8.5V
-5VE
5VE
20V
-20V
154V
BC558B
1/2IC5 LM358N PROTECT
EHT FEEDBACK
HOR FLY B
HOR DRIVE
VN2010L
BU2508DF
HOR DRIVE
E/W DRIVE
1/2IC5 LM358N
IRF624
BC547B
13VTV
7VTV
FILAMENT
VERT GND
HOR FLYBACK
VERT FLY B
VERT DRIVE
FLYBACK GENERATOR
POWER AMP
THERMAL PROTECTION
IC4 TDA8172
VERT DEFL
EHT
27.5KV
FOCUS
HOR DEFL
* SELECT VOLTAGE WITH SHORTCUT CLAMP
HOR CENT
POWERFAIL
TV MODE
SCL2
SDA2
POWER FAIL
50/60Hz TIMER
VERT DRIVE
VERT DEFL

DIAGRAM J NICAM SYSTEM B/G/I

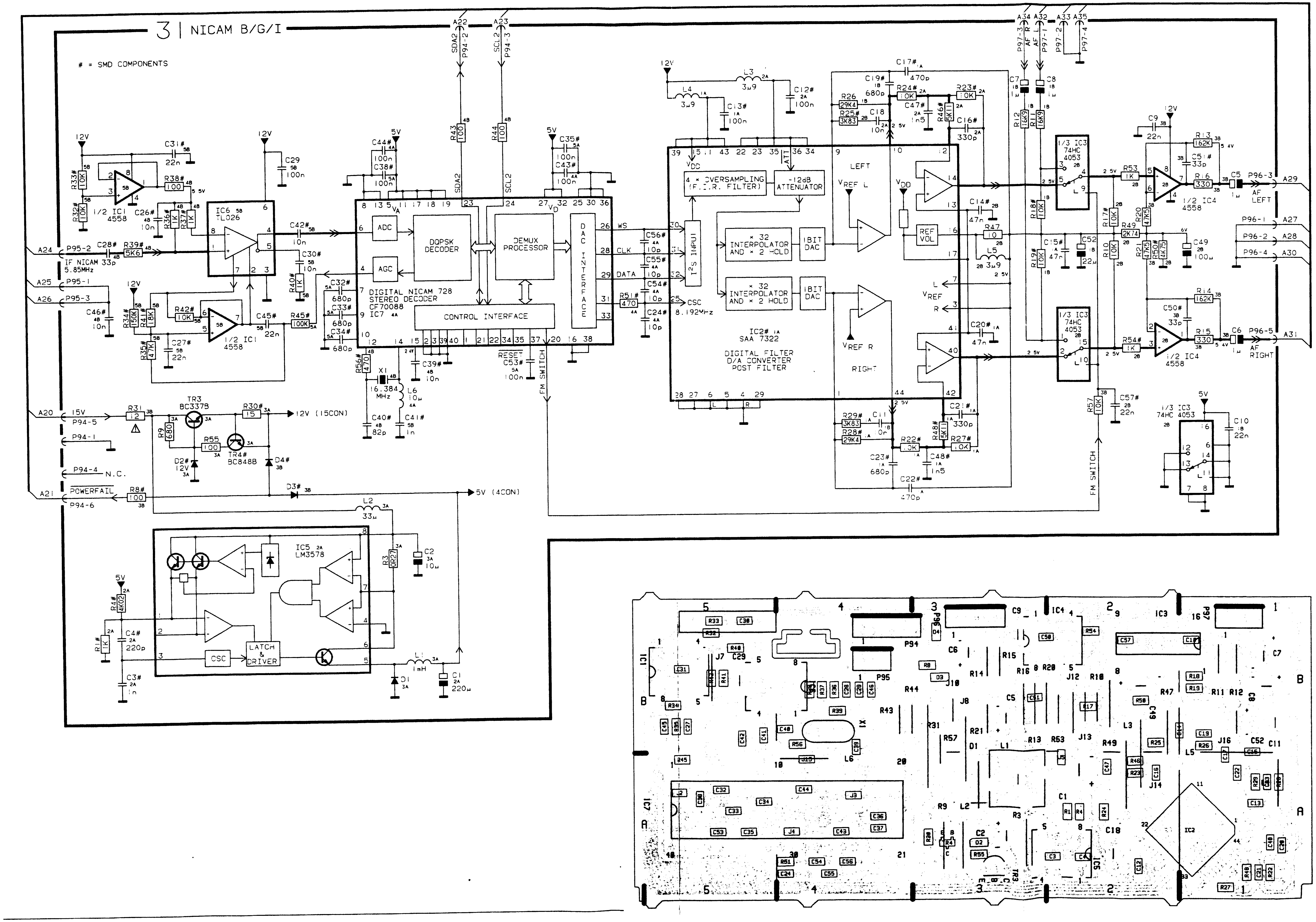
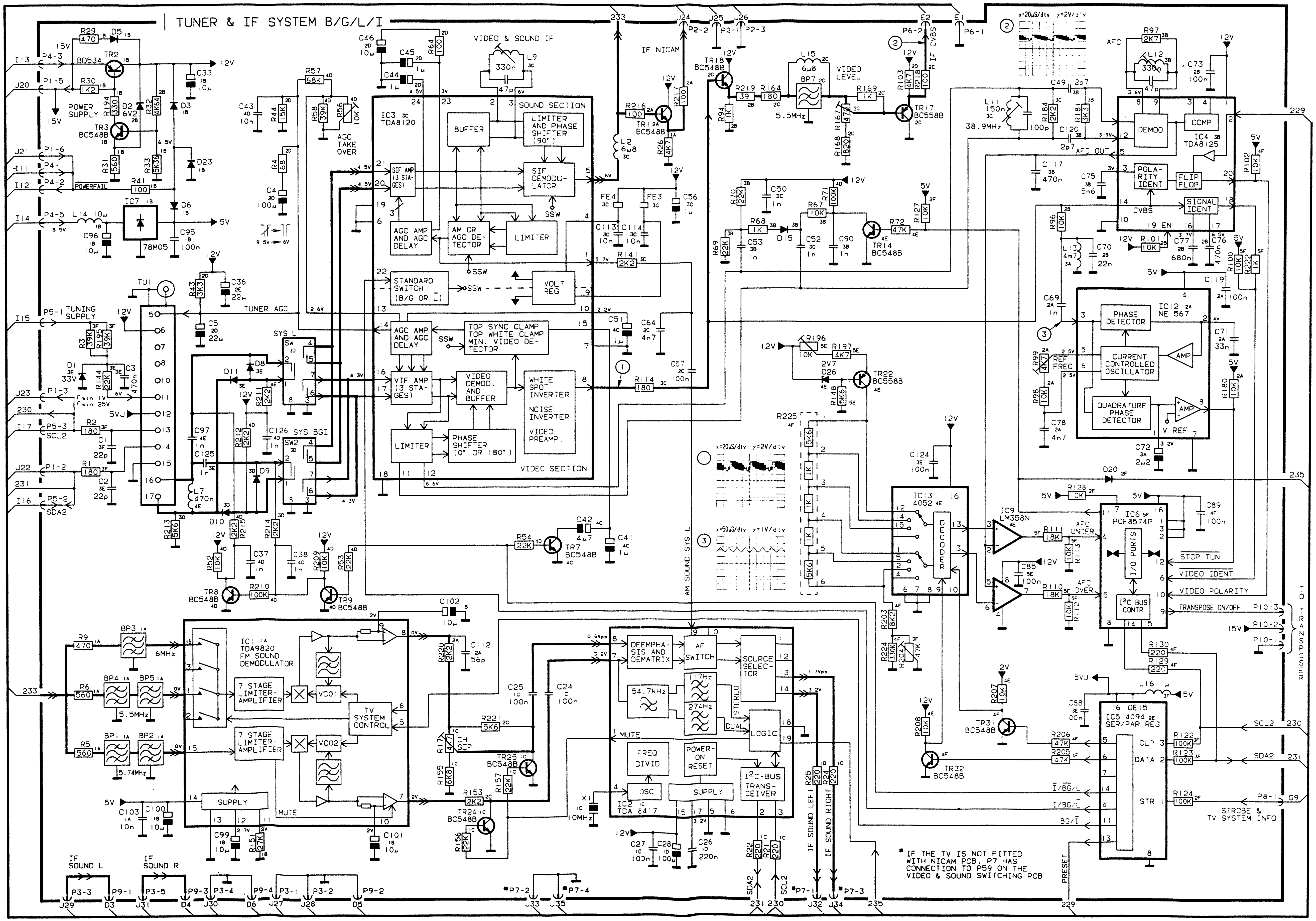
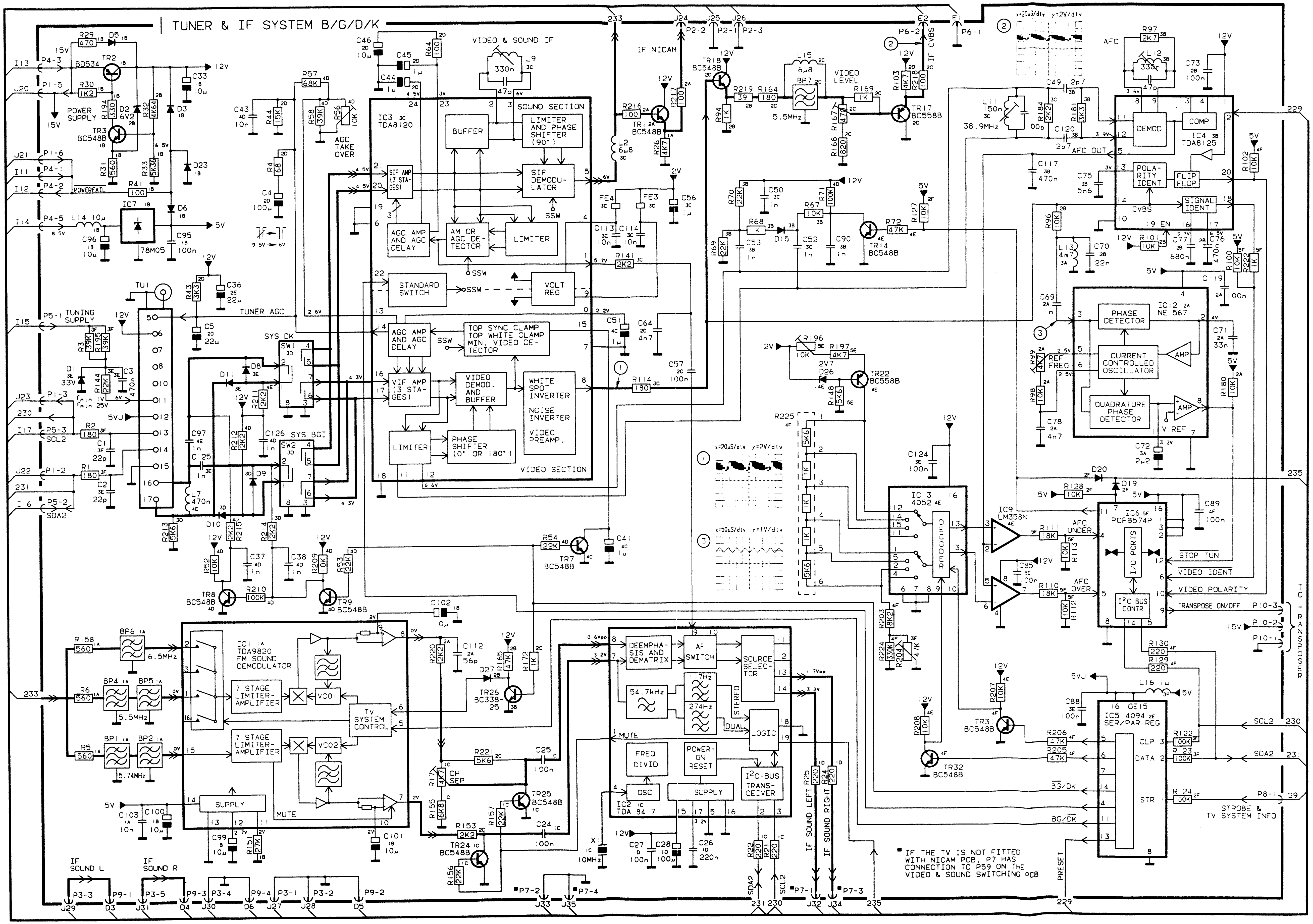

3 | NICAM B/G/I
# = SMD COMPONENTS
A22
A23
SDA2
P94-2
SCL2
P94-3
A34 A32 A33 A35
P97-3 AF R
P97-1 AF L
P97-2
P97-4
12V
5V
IC6 TL026
1/2 IC1 4558
IF NICAM 5.85MHz
A24 P95-2
A25 P95-1
A26 P95-3
C28# 33p
R39# 5K6
R33# 10K
R32# 10K
C31# 22n
R38# 100
C26# 10n
R36# 1K
R37# 1K
C29 100n
C42# 10n
C30# 10n
R40# 1K
C32# 680p
C33# 680p
C34# 680p
R34# 150K
R41# 18K
R35# 47K
R42# 10K
C46# 10n
C27# 22n
C45# 22n
R45# 100K
C44# 100n
C38# 100n
R43 100
R44 100
C35# 100n
C43# 100n
ADC
AGC
DQPSK DECODER
DEMUX PROCESSOR
DAC INTERFACE
CONTROL INTERFACE
DIGITAL NICAM 728 STEREO DECODER CF70088 IC7
RESET C53# 100n
FM SWITCH
R56# 470
X1 16.384 MHz
L6 10µ
C39# 10n
C40# 82p
C41# 1n
WS
CLK
DATA
C56# 10p
C55# 10p
C54# 10p
C24# 10p
R51# 470
CSC 8.192MHz
L4 3µ9
L3 3µ9
C13# 100n
C12# 100n
C17# 470p
C19# 680p
R26 29K4
R25# 3K83
C18 10n
R24# 10K
C47# 1n5
R46# 5K11
R23# 10K
C16# 330p
4 × OVERSAMPLING (F.I.R. FILTER)
-12dB ATTENUATOR
I²S INPUT
× 32 INTERPOLATOR AND × 2 HOLD
1BIT DAC
LEFT
RIGHT
VREF L
VREF R
VDD
REF VOL
IC2# SAA 7322
DIGITAL FILTER D/A CONVERTER POST FILTER
C14# 47n
R47 10
L5 3µ9
C20# 47n
R29# 3K83
R28# 29K4
C11 10n
R48# 5K11
C21# 330p
R22# 10K
R27# 10K
C23# 680p
C48# 1n5
C22# 470p
C7 1µ
C8 1µ
R12 16K9
R11 16K9
R18# 10K
R19# 10K
C15# 47n
C52 22µ
1/3 IC3 74HC 4053
R53 1K
R54# 1K
R17# 10K
R10 10K
R49 2K74
R20 47K5
R21 47K5
R50# 4K75
C9 22n
R13 162K
C51# 33p
R16 330
C5 1µ
P96-3 A29 AF LEFT
P96-1 A27
P96-2 A28
P96-4 A30
C49 100µ
R14 162K
C50# 33p
R15 330
C6 1µ
P96-5 A31 AF RIGHT
1/2 IC4 4558
R57 10K
C57# 22n
C10 22n
A20 15V P94-5
P94-1
P94-4 N.C.
A21 POWERFAIL P94-6
R31 12
TR3 BC337B
R30# 15
12V (15CON)
R9 680
R55 100
TR4# BC848B
D2# 12V
D4#
D3#
R8# 100
5V (4CON)
L2 33µ
IC5 LM3578
R3 0R27
C2 10µ
R4# 4K02
R1# 1K
C4# 220p
C3# 1n
CSC
LATCH & DRIVER
L1 1mH
D1
C1 220µ
IC1
IC7
IC2
IC3
IC4
P94
P95
P96
P97
X1
TR3
J3 J4 J7 J8 J10 J12 J13 J14 J16
A B

DIAGRAM A TUNER & IF SYSTEM B/G/L/I


TUNER & IF SYSTEM B/G/L/I
POWER SUPPLY
TR2 BD534
TR3 BC548B
IC7 78M05
POWERFAIL
TU1
TUNING SUPPLY
TUNER AGC
SYS L
SYS BGI
IC3 TDA8120
SIF AMP (3 STAGES)
AGC AMP AND AGC DELAY
AM OR AGC DETECTOR
LIMITER
BUFFER
SOUND SECTION
LIMITER AND PHASE SHIFTER (90°)
SIF DEMODULATOR
STANDARD SWITCH (B/G OR L)
VOLT REG
TOP SYNC CLAMP TOP WHITE CLAMP MIN. VIDEO DETECTOR
VIF AMP (3 STAGES)
VIDEO DEMOD. AND BUFFER
WHITE SPOT INVERTER
NOISE INVERTER
VIDEO PREAMP.
PHASE SHIFTER (0° OR 180°)
VIDEO SECTION
VIDEO & SOUND IF
AGC TAKE OVER
IF NICAM
TR18 BC548B
TR1 BC548B
TR17 BC558B
VIDEO LEVEL
IF CVBS
5.5MHz
38.9MHz
AFC
DEMOD
COMP
IC4 TDA8125
POLARITY IDENT
FLIP FLOP
SIGNAL IDENT
CVBS
AFC OUT
IC12 NE 567
PHASE DETECTOR
CURRENT CONTROLLED OSCILLATOR
QUADRATURE PHASE DETECTOR
AMP
REF FREQ
V REF
TR14 BC548B
TR22 BC558B
TR7 BC548B
TR8 BC548B
TR9 BC548B
IC13 4052
IC9 LM358N
AFC UNDER
AFC OVER
IC6 PCF8574P
I/O PORTS
I²C BUS CONTR
STOP TUN
VIDEO IDENT
VIDEO POLARITY
TRANSPOSE ON/OFF
IC1 TDA9820 FM SOUND DEMODULATOR
7 STAGE LIMITER-AMPLIFIER
VCO1
VCO2
TV SYSTEM CONTROL
SUPPLY
MUTE
6MHz
5.5MHz
5.74MHz
CH SEP
TR25 BC548B
TR24 BC548B
IC2 TDA 8417
DEEMPHASIS AND DEMATRIX
AF SWITCH
SOURCE SELECTOR
54.7kHz
117Hz
274Hz
STEREO
DUAL
LOGIC
FREQ DIVID
POWER-ON RESET
OSC
I²C-BUS TRANSCEIVER
10MHz
AM SOUND SYS L
IF SOUND LEFT
IF SOUND RIGHT
TR3 BC548B
TR32 BC548B
IC5 4094 SER/PAR REG
CL
DATA
STR
I/BG/L
BG/I
PRESET
SCL2
SDA2
STROBE & TV SYSTEM INFO
IF SOUND L
IF SOUND R
x=20µS/div y=2V/div
x=50µS/div y=1V/div
① ② ③

* IF THE TV IS NOT FITTED WITH NICAM PCB, P7 HAS CONNECTION TO P59 ON THE VIDEO & SOUND SWITCHING PCB

DIAGRAM A TUNER & IF SYSTEM B/G/D/K


TUNER & IF SYSTEM B/G/D/K
POWER SUPPLY
TR2 BD534
TR3 BC548B
IC7 78M05
POWERFAIL
TU1
TUNING SUPPLY
TUNER AGC
AGC TAKE OVER
SYS DK
SYS BGI
SW1
SW2
IC3 TDA8120
SOUND SECTION
VIDEO SECTION
BUFFER
LIMITER AND PHASE SHIFTER (90°)
SIF AMP (3 STAGES)
SIF DEMODULATOR
AGC AMP AND AGC DELAY
AM OR AGC DETECTOR
LIMITER
STANDARD SWITCH
SSW
VOLT REG
TOP SYNC CLAMP TOP WHITE CLAMP MIN. VIDEO DETECTOR
VIF AMP (3 STAGES)
VIDEO DEMOD. AND BUFFER
WHITE SPOT INVERTER
NOISE INVERTER
VIDEO PREAMP.
PHASE SHIFTER (0° OR 180°)
VIDEO & SOUND IF
IF NICAM
VIDEO LEVEL
5.5MHz
IF CVBS
AFC
IC4 TDA8125
DEMOD
COMP
POLARITY IDENT
FLIP FLOP
SIGNAL IDENT
AFC OUT
CVBS
38.9MHz
IC12 NE567
PHASE DETECTOR
CURRENT CONTROLLED OSCILLATOR
AMP
QUADRATURE PHASE DETECTOR
REF FREQ
V REF
IC13 4052
IC9 LM358N
AFC UNDER
AFC OVER
IC6 PCF8574P
I/O PORTS
I²C BUS CONTR
STOP TUN
VIDEO IDENT
VIDEO POLARITY
TRANSPOSE ON/OFF
TO TRANSPOSER
IC1 TDA9820 FM SOUND DEMODULATOR
7 STAGE LIMITER-AMPLIFIER
VCO1
VCO2
TV SYSTEM CONTROL
SUPPLY
MUTE
6.5MHz
5.5MHz
5.74MHz
CH SEP
IC2 TDA8417
DEEMPHASIS AND DEMATRIX
AF SWITCH
SOURCE SELECTOR
STEREO
DUAL
LOGIC
54.7kHz
117Hz
274Hz
FREQ DIVID
POWER-ON RESET
OSC
SUPPLY
I²C-BUS TRANSCEIVER
IF SOUND LEFT
IF SOUND RIGHT
IC5 4094 SER/PAR REG
CLP
DATA
STR
PRESET
SCL2
SDA2
STROBE & TV SYSTEM INFO
BG/DK
IF SOUND L
IF SOUND R
x=20µS/div y=2V/div
x=50µS/div y=1V/div

■ IF THE TV IS NOT FITTED WITH NICAM PCB, P7 HAS CONNECTION TO P59 ON THE VIDEO & SOUND SWITCHING PCB

DIAGRAM A TUNER & IF SYSTEM B/G/M

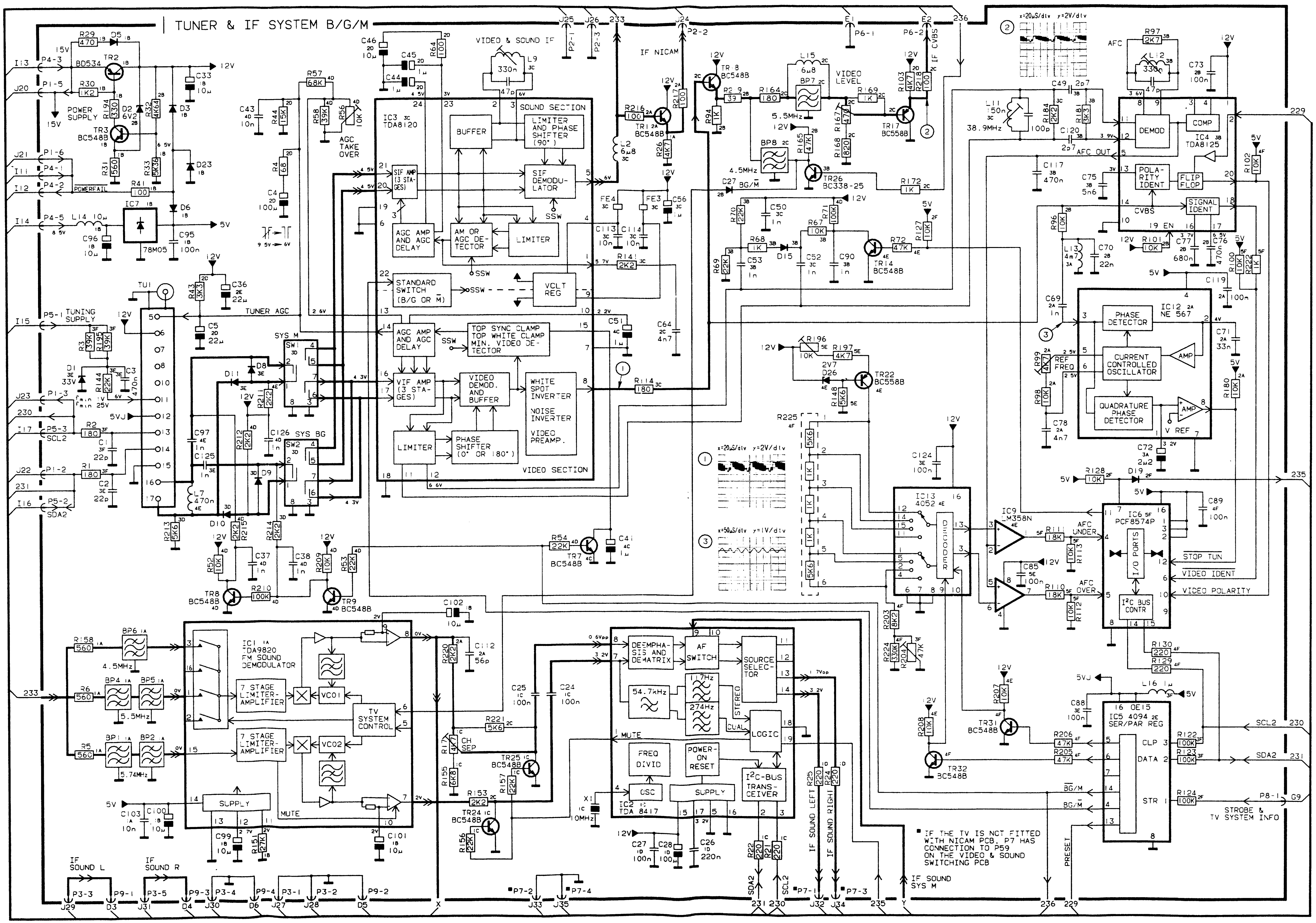

TUNER & IF SYSTEM B/G/M
POWER SUPPLY
BD534
TR2
TR3 BC548B
IC7 78M05
POWERFAIL
TU1
TUNING SUPPLY
TUNER AGC
SYS M
SYS BG
IC3 TDA8120
SIF AMP (3 STAGES)
AGC AMP AND AGC DELAY
AM OR AGC DETECTOR
LIMITER
BUFFER
LIMITER AND PHASE SHIFTER (90°)
SIF DEMODULATOR
SOUND SECTION
STANDARD SWITCH (B/G OR M)
VOLT REG
SSW
TOP SYNC CLAMP TOP WHITE CLAMP MIN. VIDEO DETECTOR
VIF AMP (3 STAGES)
VIDEO DEMOD. AND BUFFER
WHITE SPOT INVERTER
NOISE INVERTER
VIDEO PREAMP.
PHASE SHIFTER (0° OR 180°)
VIDEO SECTION
AGC TAKE OVER
VIDEO & SOUND IF
IF NICAM
VIDEO LEVEL
5.5MHz
4.5MHz
BG/M
IF CVBS
38.9MHz
AFC
AFC OUT
IC4 TDA8125
DEMOD
COMP
POLARITY IDENT
FLIP FLOP
SIGNAL IDENT
CVBS
19 EN
IC12 NE 567
PHASE DETECTOR
CURRENT CONTROLLED OSCILLATOR
AMP
QUADRATURE PHASE DETECTOR
REF FREQ
V REF
IC13 4052
IC9 LM358N
AFC UNDER
AFC OVER
IC6 PCF8574P
I/O PORTS
I²C BUS CONTR
STOP TUN
VIDEO IDENT
VIDEO POLARITY
IC5 4094 SER/PAR REG
CLP
DATA
STR
SCL2
SDA2
STROBE & TV SYSTEM INFO
BG/M
PRESET
IC1 TDA9820 FM SOUND DEMODULATOR
7 STAGE LIMITER-AMPLIFIER
VCO1
VCO2
TV SYSTEM CONTROL
SUPPLY
MUTE
4.5MHz
5.5MHz
5.74MHz
CH SEP
IC2 TDA 8417
DEEMPHASIS AND DEMATRIX
AF SWITCH
SOURCE SELECTOR
54.7kHz
117Hz
274Hz
STEREO
DUAL
LOGIC
FREQ DIVID
POWER-ON RESET
OSC
SUPPLY
I²C-BUS TRANSCEIVER
10MHz
IF SOUND LEFT
IF SOUND RIGHT
IF SOUND L
IF SOUND R
IF SOUND SYS M
■ IF THE TV IS NOT FITTED WITH NICAM PCB, P7 HAS CONNECTION TO P59 ON THE VIDEO & SOUND SWITCHING PCB
x=20µS/div y=2V/div
x=50µS/div y=1V/div
12V
5V
15V
I13
I11
I12
I14
I15
I16
I17
J20
J21
J22
J23
230
231
233
235
236
229
G9

DIAGRAM TUNER & IF SYSTEM B/G/M

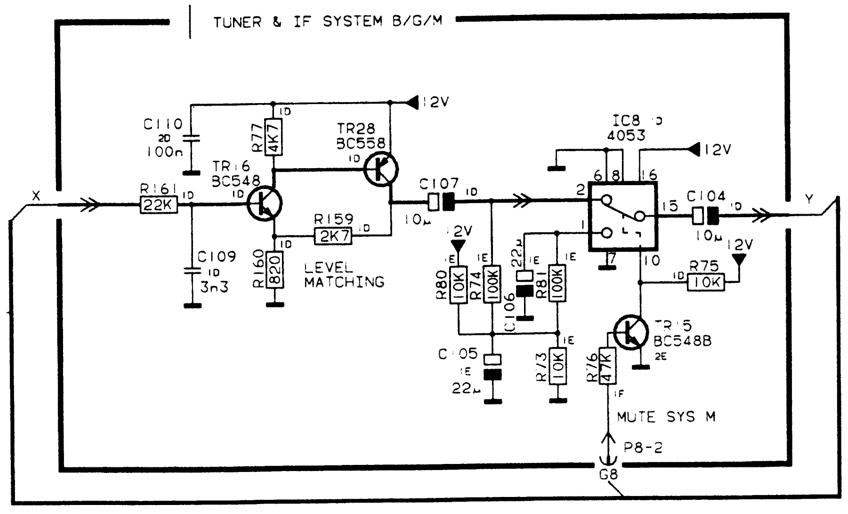
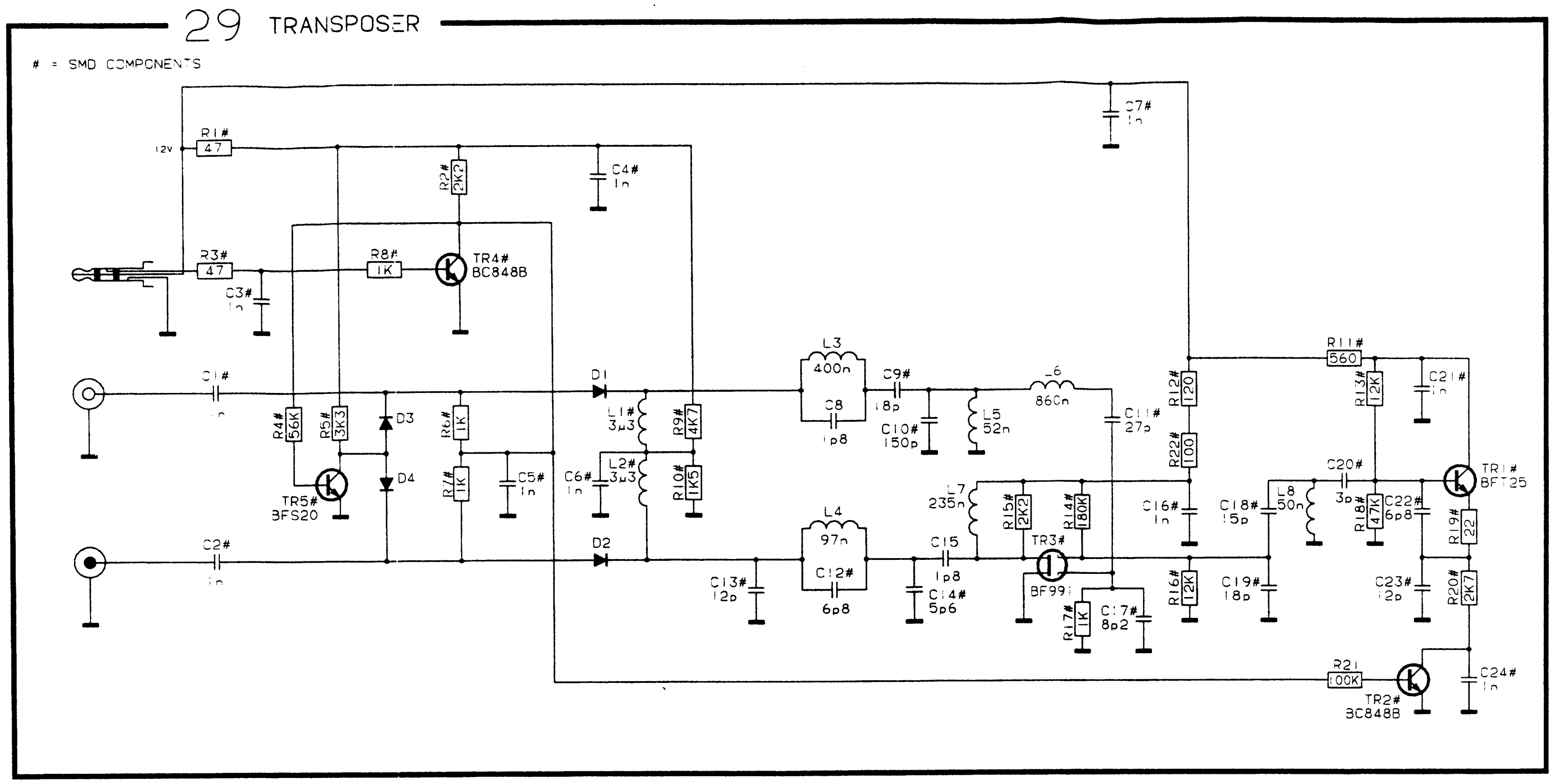
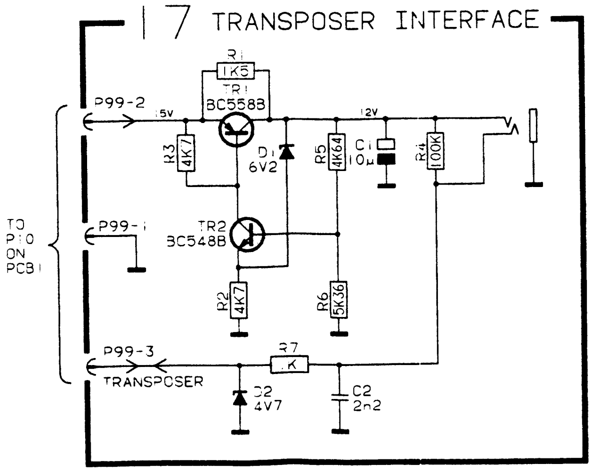

TUNER & IF SYSTEM B/G/M
12V
C110
100n
R77
4K7
TR28
BC558
IC8
4053
12V
TR16
BC548
R161
22K
X
Y
R159
2K7
C107
10µ
C104
10µ
C109
3n3
R160
820
LEVEL MATCHING
R80
10K
R74
100K
C106
22µ
R81
100K
R75
10K
12V
C105
22µ
R73
10K
R76
47K
TR15
BC548B
MUTE SYS M
P8-2
G8

DIAGRAM TRANSPOSER


29 TRANSPOSER
# = SMD COMPONENTS
12V
R1#
47
R2#
2K2
C4#
1n
C7#
1n
R3#
47
C3#
1n
R8#
1K
TR4#
BC848B
C1#
1n
R4#
56K
R5#
3K3
D3
D4
TR5#
BFS20
R6#
1K
R7#
1K
C5#
1n
D1
D2
L1#
3µ3
L2#
3µ3
C6#
1n
R9#
4K7
R10#
1K5
L3
400n
C8
1p8
C9#
18p
C10#
150p
L5
52n
L6
860n
C11#
27p
R12#
120
R22#
100
R11#
560
R13#
12K
C21#
1n
C20#
3p
TR1#
BFT25
C2#
1n
L4
97n
C12#
6p8
C13#
12p
C15
1p8
C14#
5p6
L7
235n
R15#
2K2
R14#
180K
TR3#
BF991
R17#
1K
C17#
8p2
C16#
1n
R16#
12K
C18#
15p
L8
50n
R18#
47K
C22#
6p8
R19#
22
C19#
18p
C23#
12p
R20#
2K7
R21
100K
TR2#
BC848B
C24#
1n


17 TRANSPOSER INTERFACE
R1
1K5
TR1
BC558B
P99-2
5V
12V
R3
4K7
D1
6V2
R5
4K64
C1
10µ
R4
100K
TO P10 ON PCB1
P99-1
TR2
BC548B
R2
4K7
R6
5K36
P99-3
TRANSPOSER
R7
1K
D2
4V7
C2
2n2

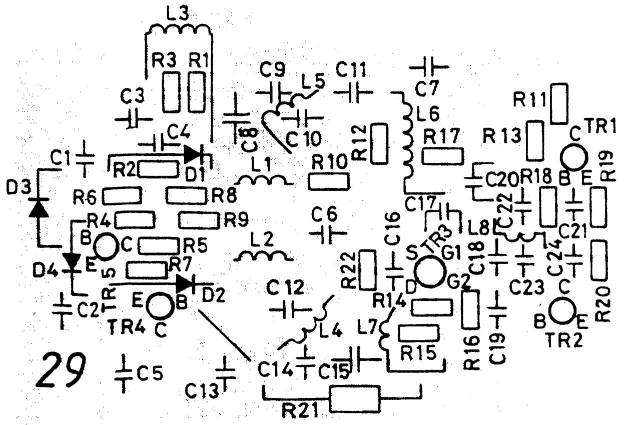
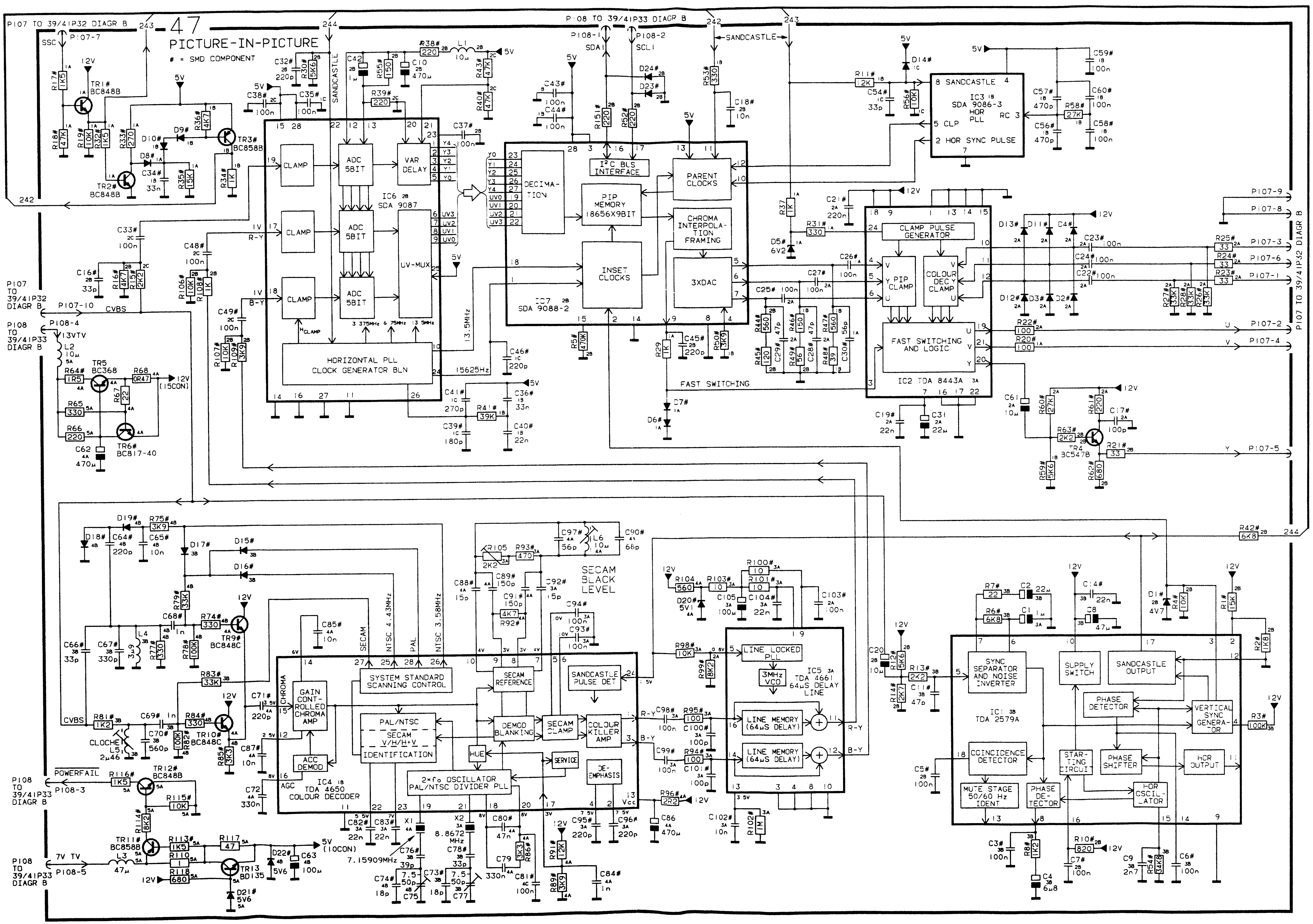

L3
R3
R1
C3
C9
L5
C11
C7
C4
C8
C10
L6
R11
C1
R2
D1
R12
R17
R13
TR1
D3
R6
R8
R10
C20
R18
R19
L1
R4
R9
C6
C16
L8
C22
C21
D4
R5
L2
TR3
C18
TR5
R7
R22
C2
D2
C12
R14
C24
C23
TR4
L4
L7
R15
R16
C19
TR2
R20
29
C5
C13
C14
C15
R21

DIAGRAM PICTURE-IN-PICTURE


47
PICTURE-IN-PICTURE
# = SMD COMPONENT
P107 TO 39/41P32 DIAGR B
P108 TO 39/41P33 DIAGR B
SANDCASTLE
SSC
P107-7
P108-1 SDA
P108-2 SCL
TR1# BC848B
TR2# BC848B
TR3# BC858B
CLAMP
ADC 5BIT
VAR DELAY
UV-MUX
HORIZONTAL PLL CLOCK GENERATOR BLN
IC6 SDA 9087
13.5MHz
15625Hz
DECIMATION
I²C BUS INTERFACE
PIP MEMORY 18656X9BIT
INSET CLOCKS
PARENT CLOCKS
CHROMA INTERPOLATION FRAMING
3XDAC
IC7 SDA 9088-2
FAST SWITCHING
8 SANDCASTLE
IC3 SDA 9086-3 HOR PLL
5 CLP
2 HOR SYNC PULSE
RC 3
CLAMP PULSE GENERATOR
Y PIP CLAMP
COLOUR DEC Y CLAMP
FAST SWITCHING AND LOGIC
IC2 TDA 8443A
TR4 BC547B
P107-9
P107-8
P107-3
P107-6
P107-1
P107-2
P107-4
P107-5
P107-10 CVBS
P108-4 13VTV
TR5 BC368
TR6# BC817-40
12V (15CON)
SECAM BLACK LEVEL
TR9# BC848C
TR10# BC848C
CLOCHE L5
SYSTEM STANDARD SCANNING CONTROL
GAIN CONTROLLED CHROMA AMP
ACC DEMOD
PAL/NTSC
SECAM V/H/H+V
IDENTIFICATION
2×fo OSCILLATOR PAL/NTSC DIVIDER PLL
HUE
SECAM REFERENCE
DEMOD BLANKING
SECAM CLAMP
SANDCASTLE PULSE DET
COLOUR KILLER AMP
SERVICE
DE-EMPHASIS
IC4 TDA 4650 COLOUR DECODER
SECAM
NTSC 4.43MHz
PAL
NTSC 3.58MHz
X1 7.15909MHz
X2 8.8672 MHz
LINE LOCKED PLL
3MHz VCO
IC5 TDA 4661 64µS DELAY LINE
LINE MEMORY (64µS DELAY)
R-Y
B-Y
SYNC SEPARATOR AND NOISE INVERTER
SUPPLY SWITCH
SANDCASTLE OUTPUT
PHASE DETECTOR
VERTICAL SYNC GENERATOR
IC1 TDA 2579A
COINCIDENCE DETECTOR
STARTING CIRCUIT
PHASE SHIFTER
HOR OUTPUT
MUTE STAGE 50/60 Hz IDENT
PHASE DETECTOR
HOR OSCILLATOR
POWERFAIL
P108-3
TR12# BC848B
TR11# BC858B
TR13 BD135
7V TV
P108-5
5V (10CON)
D21# 5V6
D22# 5V6
242
243
244

2-30
ACCESSORIES

PCB 47 PICTURE-IN-PICTURE

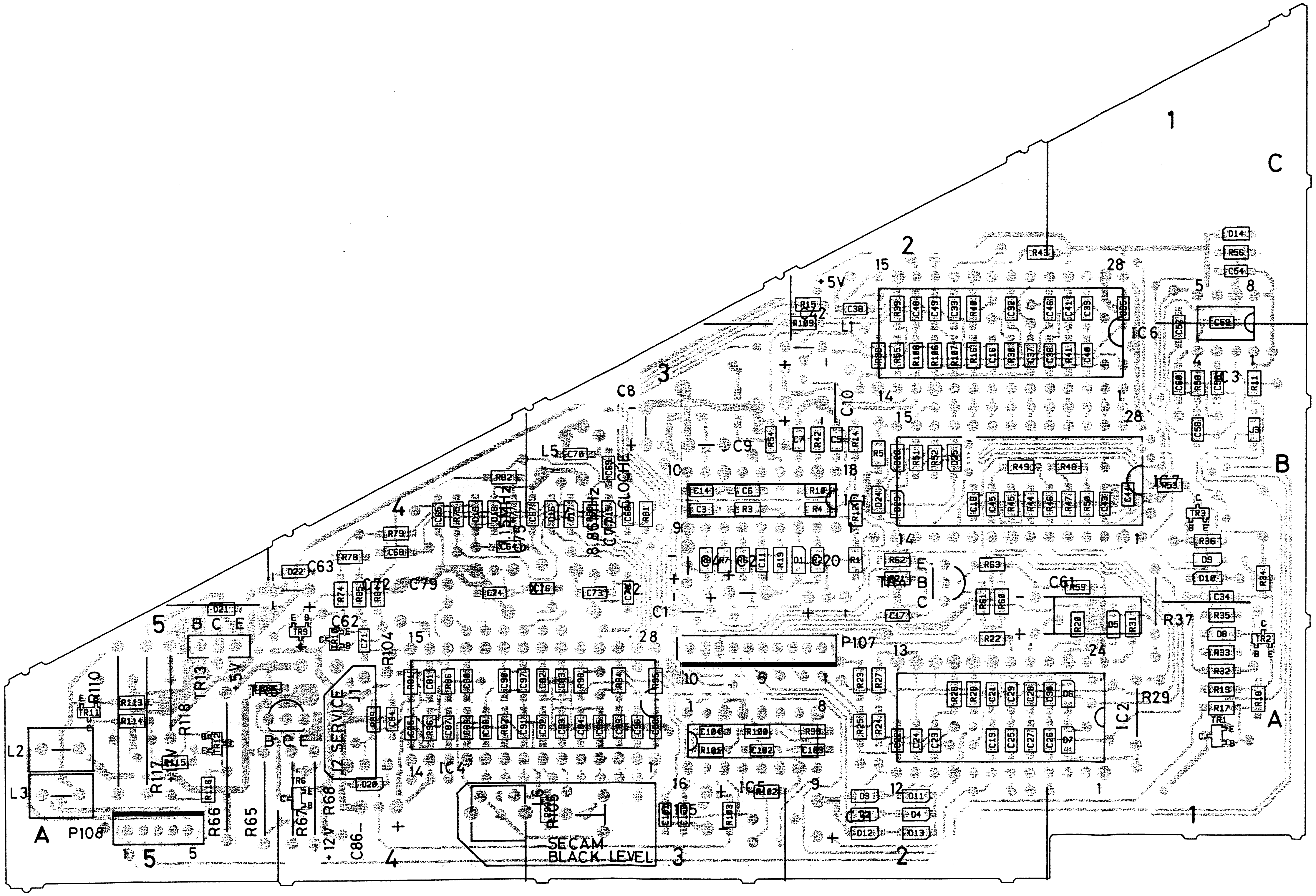
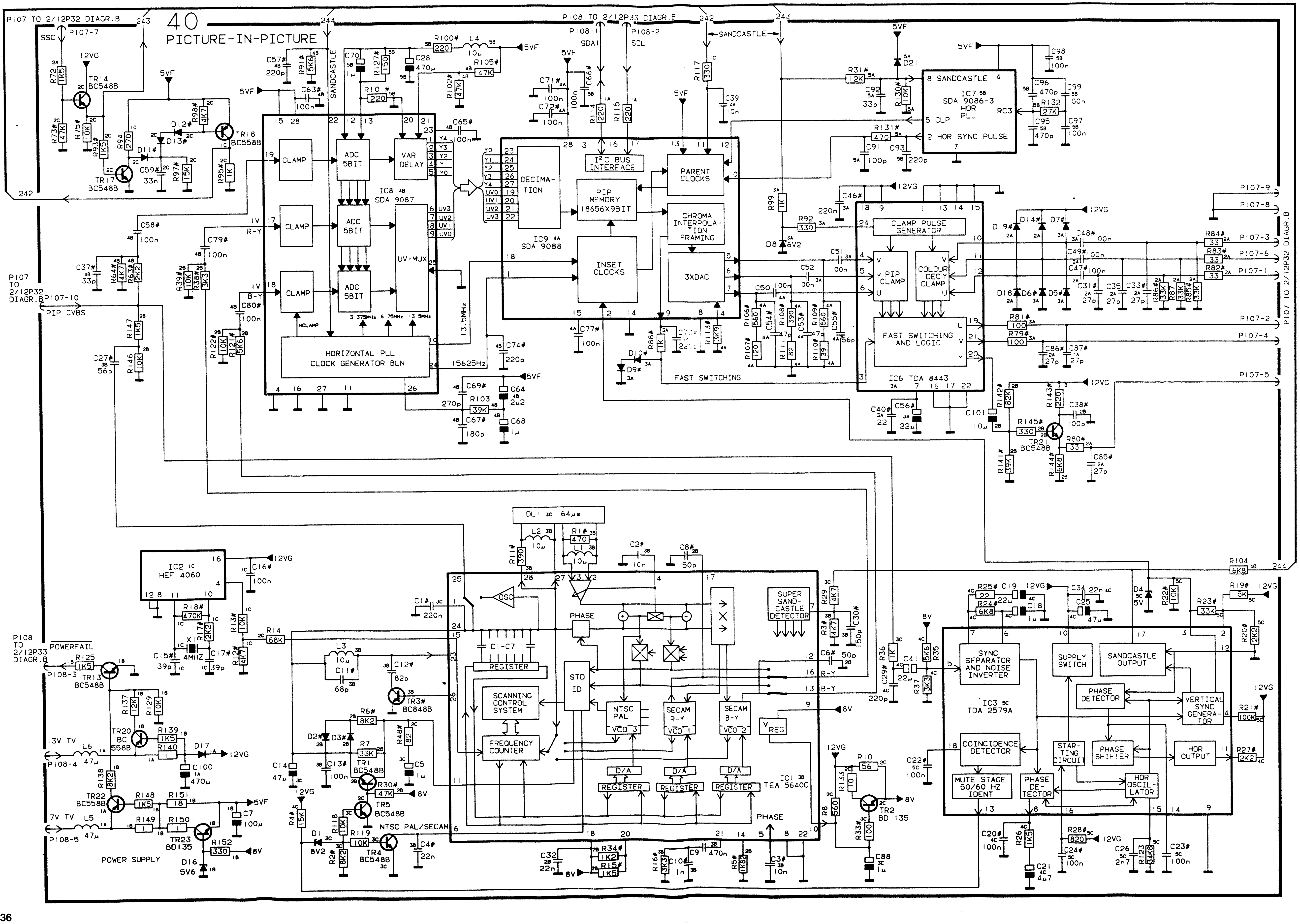
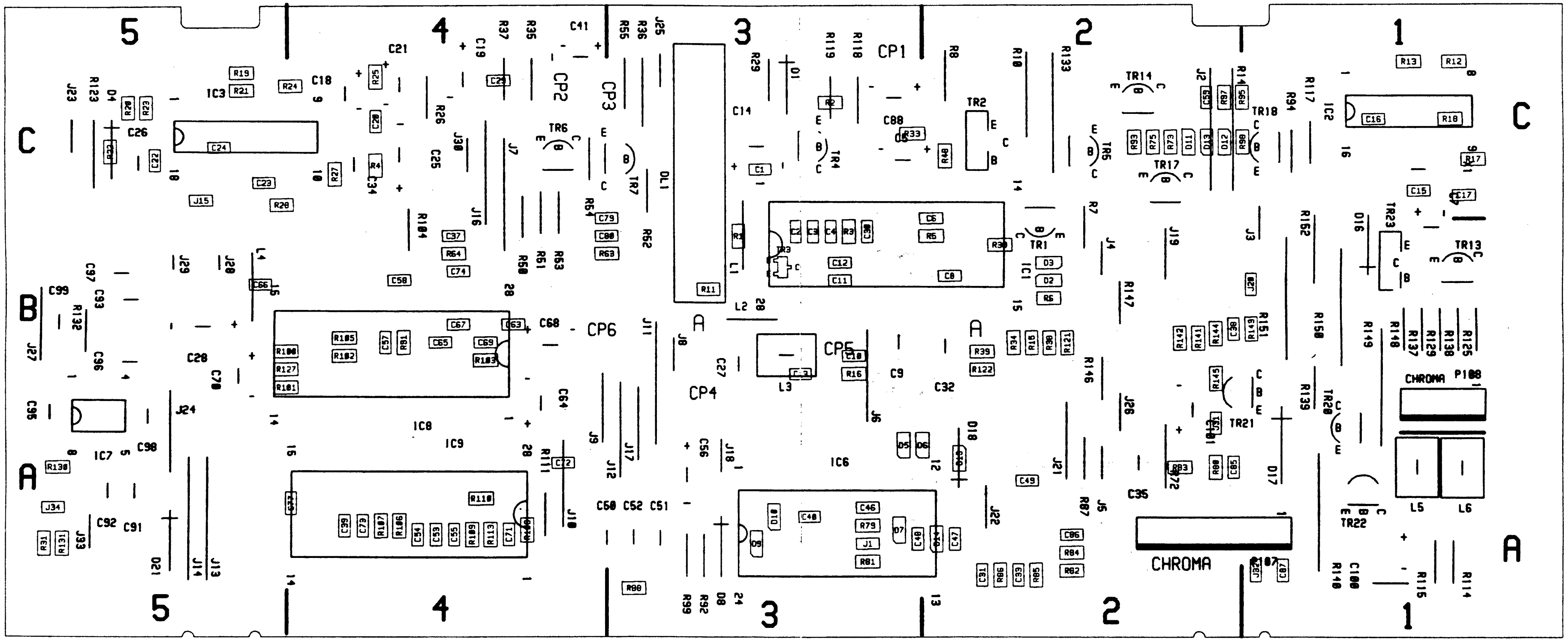

1
C
2
15
28
+5V
IC6
IC3
3
C8
C10
14
15
28
C9
L5
SECAM
SECAM/PAL
10
18
IC1
IC7
B
4
9
14
C63
C79
C61
R37
C62
5
B C E
15
28
P107
13
24
TR13
+5V
R110
10
1
8
IC2
R29
A
L2
L3
J1
SERVICE
IC4
14
16
IC5
9
12
1
A
P108
5
R66
R65
R67
R68
+12V
C86
4
SECAM
BLACK LEVEL
3
2
1

DIAGRAM PICTURE-IN-PICTURE – MX 4000

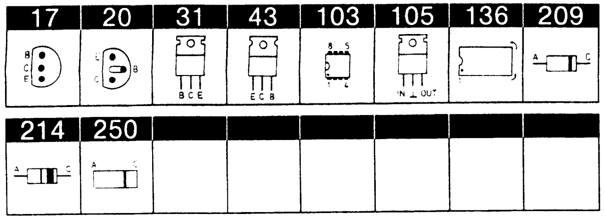

40
PICTURE-IN-PICTURE
P107 TO 2/12P32 DIAGR.B
P108 TO 2/12P33 DIAGR.B
SANDCASTLE
SDA
SCL
SSC
P107-7
IC8 SDA 9087
CLAMP
ADC 5BIT
VAR DELAY
UV-MUX
HORIZONTAL PLL CLOCK GENERATOR BLN
HCLAMP
13.5MHz
15625Hz
IC9 SDA 9088
DECIMATION
I²C BUS INTERFACE
PIP MEMORY 18656X9BIT
PARENT CLOCKS
CHROMA INTERPOLATION FRAMING
INSET CLOCKS
3XDAC
FAST SWITCHING
IC7 SDA 9086-3 HOR PLL
8 SANDCASTLE
5 CLP
2 HOR SYNC PULSE
RC3
IC6 TDA 8443
CLAMP PULSE GENERATOR
Y PIP CLAMP
COLOUR DEC Y CLAMP
FAST SWITCHING AND LOGIC
P107-9
P107-8
P107-3
P107-6
P107-1
P107-2
P107-4
P107-5
P107 TO 2/12P32 DIAGR.B
P107 TO 2/12P32 DIAGR.B P107-10
PIP CVBS
IC2 HEF 4060
4MHZ
DL1 64µs
IC1 TEA 5640C
OSC
PHASE
C1-C7
REGISTER
SCANNING CONTROL SYSTEM
FREQUENCY COUNTER
STD ID
NTSC PAL VCO 3
SECAM R-Y VCO 1
SECAM B-Y VCO 2
SUPER SANDCASTLE DETECTOR
REG
D/A
R-Y
B-Y
NTSC PAL/SECAM
IC3 TDA 2579A
SYNC SEPARATOR AND NOISE INVERTER
SUPPLY SWITCH
SANDCASTLE OUTPUT
PHASE DETECTOR
VERTICAL SYNC GENERATOR
COINCIDENCE DETECTOR
STARTING CIRCUIT
PHASE SHIFTER
HOR OUTPUT
MUTE STAGE 50/60 HZ IDENT
PHASE DETECTOR
HOR OSCILLATOR
P108 TO 2/12P33 DIAGR.B
POWERFAIL
P108-3
P108-4
P108-5
13V TV
7V TV
POWER SUPPLY
5VF
12VG
8V
TR14 BC548B
TR17 BC548B
TR18 BC558B
TR21 BC548B
TR13 BC548B
TR20 BC 558B
TR22 BC558B
TR23 BD135
TR1 BC548B
TR3 BC848B
TR4 BC548B
TR5 BC548B
TR2 BD 135

2-32
ACCESSORIES

PCB 40 PICTURE-IN-PICTURE – MX 4000


5
4
3
2
1
C
B
A
CP1
CP2
CP3
CP4
CP5
CP6
IC1
IC2
IC3
IC6
IC7
IC8
IC9
DL1
TR1
TR2
TR4
TR5
TR6
TR7
TR13
TR14
TR17
TR18
TR20
TR21
TR22
TR23
L2
L3
L5
L6
CHROMA
CHROMA P100

LIST OF ELECTRICAL PARTS



Resistors not referred to are standard, see page 3-22

PCB 1, 8007449
Tuner & IF B/G/L

IC1	8341569	**136**	TDA 9820
IC2	8341794	**136**	TDA 8417
IC3	8341137	**136**	TDA 8120
IC4	8341142	**136**	TDA 8124
IC5△	8340782	**136**	4094
IC6△	8341158	**136**	PCF 8574P
IC7	8340212	**105**	78M05
IC9	8340569	**103**	LM 358
IC12	8341311	**103**	NE 567
IC13△	8340602	**136**	4052

TR1	8320509	**20**	BC 548B
TR2*	8320369	**31**	BD 534
	3358267		Heat sink f/TR2
TR3	8320509	**20**	BC548B
TR7-TR9	8320509	**20**	BC548B
TR14	8320509	**20**	BC548B
TR17	8320510	**20**	BC558B
TR18	8320509	**20**	BC548B
TR22	8320510	**20**	BC558B
TR24-TR25	8320509	**20**	BC548B
TR31-TR32	8320509	**20**	BC548B

D1	8300803	**214**	ZPD33V 0.4W
D2	8300596	**209**	ZPD6.2V 0.4W
D3	8300779	**214**	1N 4531
D5-D6	8300779	**214**	1N 4531
D8-D11	8300478	**209**	BA 483
D15	8300478	**209**	BA 483
D23	8300779	**214**	1N 4531
D26	8300222	**209**	ZPD2.7V 0.4W

R17	5370370	4.7kΩ 30% 0.3W
R32	5021305	4.64kΩ 1% 1/8W
R33	5021306	5.36kΩ 1% 1/8W
R56	5370381	10kΩ 30% 0.1W
R99	5370370	4.7kΩ 30% 0.3W
R151	5021304	27kΩ 1% 1/8W
R167	5370432	470Ω 30% 0.3W
R196	5370381	10kΩ 30% 0.1W
R204	5370382	47kΩ 30% 0.1W
R225	5030037	2 x 5.6kΩ + 3 x 1kΩ SIL

C1-C2	4000136	22 pF 5% 63V
C3	4130313	470nF 20% 63V
C4	4200628	100µF -20+50% 16V
C5	4200544	22µF 20% 16V
C24-C25	4130230	100nF 20% 63V
C26	4130233	220nF 20% 63V
C27	4130230	100nF 20% 63V
C28	4200628	100µF -20+50% 16V
C33	4200510	10µF 20% 16V
C36	4200544	22µF 20% 16V
C37-C38	4010105	1nF 10% 50V
C41	4200512	1µF 20% 50V
C42	4200515	4.7µF 20% 25V
C43	4010106	10nF -20+80% 40V
C44-C45	4200512	1µF 20% 50V
C46	4200510	10µF 20% 16V
C49	4000380	2.7pF ±0.25pF 50V
C50	4010105	1nF 10% 50V
C51	4200512	1µF 20% 50V
C52-C53	4010105	1nF 10% 50V
C56	4200512	1µF 20% 50V
C57	4130230	100nF 20% 63V
C64	4100239	4.7nF 5% 63V
C69	4010105	1nF 10% 50V
C70	4130262	22nF 20% 63V
C71	4130257	33nF 20% 63V
C72	4200517	2.2µF 20% 50V
C73	4130230	100nF 20% 63V
C75	4130347	5.6nF 10% 63V
C76	4130313	470nF 20% 63V
C77	4130311	680nF 10% 63V
C78	4010241	4.7nF 5% 50V
C85	4130230	100nF 20% 63V
C88-C89	4130230	100nF 20% 63V
C90	4010105	1nF 10% 50V
C95	4130230	100nF 20% 63V
C96	4200510	10µF 20% 16V
C97	4010105	1nF 10% 50V

⇨

△ indicates that static electricity may destroy the component.
*Specially selected or adapted sample.

C99-C102	4200510	10µF 20% 16V
C103	4010106	10nF -20+80% 40V
C112	4000155	56pF 5% 63V
C113-C114	4010106	10nF -20+80% 40V
C117	4130234	470nF 10% 63V
C119	4130230	100nF 20% 63V
C120	4000380	2.7pF ±0.25pF 50V
C124	4130230	100nF 20% 63V
C125-C126	4010105	1nF 10% 50V

L2	8020595	Coil 6.8µH 10%
L7	8020650	Coil 470nH 5%
L9	8020738	Coil 38.9MHz
L11	8020739	Coil 38.9MHz
L12	8020738	Coil 38.9MHz
L13	8022250	Coil 4.7mH 5%
L14	8020807	Coil 10µH 10%
L15	8020729	Coil 6.8µH 5%
L16	8020600	Coil 1µH 10%

BP1-BP2	8030029	Cer filter 5.74MHz ±50kHz
BP4	8030021	Cer filter 5.5MHz ±75kHz
BP5	8030026	Cer filter 5.5MHz ±50kHz
BP7	8030218	Cer filter 5.5MHz

SW1	8030082	OFW K3252
SW2	8030137	OFW G3264

TU1	8050140	Tuner MTX 4/PLL

FE3-FE4	6000038	Ferrite core

X1	8090105	Crystal 10.0MHz

P1	7220713	Plug 6/6 pole
P2	7220710	Plug 3/3 pole
P3-P4	7220712	Plug 5/5 pole
P5	7220710	Plug 3/3 pole
P6	7220709	Plug 2/2 pole
P7	7220711	Plug 4/4 pole
P8	7220709	Plug 2/2 pole
P9	7220711	Plug 4/4 pole
P10	7220710	Plug 3/3 pole

PCB 1, 8007997
Tuner & IF B/G/M
(Accessories)

IC8△	8340340	**136**	4053

TR15-TR16	8320509	**20**	BC 548B
TR26	8320512	**20**	BC 338-25
TR28	8320104	**20**	BC 558B

D19	8300058	**209**	1N 4148
D27	8300212	**209**	1N 4448

C104	4200510	10µF 20% 16V
C105-C106	4200525	22µF 20% 10V
C107	4200510	10µF 20% 16V
C109	4100238	3.3nF 5% 63V
C110	4130306	100nF 10% 63V

BP6	8030124	Cer filter 4.5MHz
BP8	8030223	Cer filter 4.5MHz

SW1	8008011	OFW G 3450

Other electrical parts like PCB1, Tuner & IF B/G/L

△ indicates that static electricity may destroy the component.

B/G/L/I 3390452
(Accessories)

Small bag with components to extend Tuner & IF B/G/L to system I.

D20	8300058	**209**	1N 4148
R9	5011441		470Ω 5% 1/8W
BP3	8030033		Cer filter 6MHz
SW2	8030159		Filter J 3251

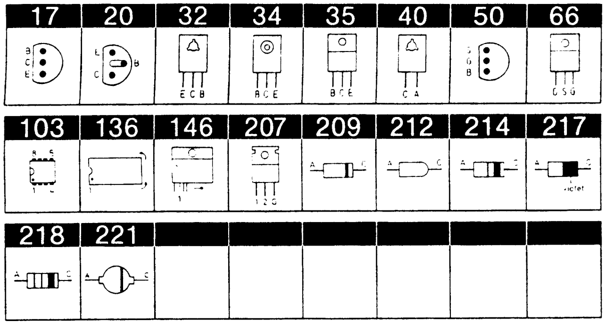
B/G/D/K 3390453
(Accessories)

Small bag with components to modify Tuner & IF B/G/L to system B/G/D/K.

TR26	8320512	**20**	BC 338-25				
D19	8300058	**209**	1N 4148	D27	8300212	**209**	1N 4448
D20	8300058	**209**	1N 4148				
R158	5011358		560Ω 5% 1/8W	R172	5010816		1kΩ 5% 1/8W
R165	5010937		47kΩ 5% 1/8W				
BP6	8030173		Filter 6.5MHz				
SW1	8030241		Filter K 3255				

PCB 3, 8008099 Video Output

TR1-TR3	8320961	**17**	BF 421				
TR4-TR6	8320962	**43**	BF 871				
	3358282		Heat sink f/TR4-6				
D1-D4	8300409	**214**	BAV 20	D14-D18	8300058	**209**	1N 4148
D5-D7	8300058	**209**	1N 4148	D19-D21	8300482	**250**	LL 4148
D8-D13	8300482	**250**	LL 4148				
R1-R3	5021395		8.2kΩ 5% 3W	R18	5020345		47Ω 10% 0.3W
				R19	5010806		1.2kΩ 5% 1/3W
R10-R12	5001167		2.2kΩ 10% 1/2W	R20	5390032		Focus potentiometer
C1-C3	4000239		33pF 5% 50V	C5	4010211		2.2nF -0+100% 2kV
				C6	4200515		4.7μF 20% 25V
C4	4130098		100nF 20% 400V	C7	4000287		220nF -20+80% 25V
L1	8020590		270μH 10%				
S1	7400038		Switch 1 pole				
P1	7200119		Socket picture tube				
P89	7220427		Plug 5/5 pole				
P90	7220715		Plug 8/8 pole				
P91	7500152		Contact pin				



Resistors not referred to are standard, see page 3-22

PCB 4, 8007519
Power Supply & Deflection

IC1-	8330234	**136**	CNY 17-2ZW	IC4	8340794	**146**	TDA 8172
IC2					2816195		Spring clip
IC3	8330297	**136**	CNY17 F2ZW	IC5	8340569	**103**	LM 358

TR1	8320850	**35**	BUT 12F	TR13-	8320497	**20**	BC 547B
	2816195		Spring clip	TR14			
TR2	8320507	**20**	BC 337-25	TR15	8320510	**20**	BC 558B
TR3	8320503	**20**	BC 557B	TR16	8320503	**20**	BC 557B
TR4	8320521	**20**	BC 556B	TR17-	8320497	**20**	BC 547B
TR5	8320514	**20**	BC 546B	TR19			
TR6	8320503	**20**	BC 557B	TR20△	8320853	**66**	IRF 624
TR7-	8320497	**20**	BC 547B	TR31△	8320922	**50**	VN 2010L
TR8				TR33	8320982	**34**	BU 2508DF
TR9	8320503	**20**	BC 557B		2816154		Spring clip
TR10	8320626	**17**	BC 368		6710008		Ferrite core
TR11	8320503	**20**	BC 557B	TR34	8320497	**20**	BC 547B
TR12	8320994	**32**	FXT 651S	TR35△	8320853	**66**	IRF 624

D1-	8300302	**212**	1N 5407	D40-	8300779	**218**	1N 4531
D4				D41			
D5-	8300675	**217**	BYV 26B	D42	8300596	**209**	ZPD 6.2V 0.4W
D6				D50	8300310	**209**	ZPD 10V 0.4W
	6710008		Ferrite core	D51	8300779	**218**	1N 4531
D7	8300670	**221**	BYV 26D	D52	8300201	**209**	ZPD 6.2V 0.4W
D8	8300779	**218**	1N 4531	D60	8300518	**217**	BA 157
D9-	8300671	**209**	RGP 10B	D61	8300671	**209**	RGP 10B
D12				D70	8300779	**218**	1N 4531
D15-	8300779	**218**	1N 4531	D71	8300310	**209**	ZPD 10V 0.4W
D18				D75-	8300779	**218**	1N 4531
D30	8300784	**221**	BYW 96D	D76			
D31	8300649	**221**	1N 5060	D77	8300518	**217**	BA 157
D32	8300671	**209**	RGP 10B	D78	8300779	**218**	1N 4531
D33	8300388	**214**	RGP 30P	D80-	8300518	**217**	BA 157
D34	8300776	**40**	BYW 29F	D81			
	2816195		Spring clip	D82	8300023	**209**	1N 4002
	6710008		Ferrite core	D83	8300304	**221**	BY 228
D35	8300671	**209**	RGP 10B	D84	8300784	**221**	BYW 96D
D36	8300776	**40**	BYW 29F	D90-	8300388	**214**	RGP 30P
	2816195		Spring clip	D91			
	6710008		Ferrite core	D93	8300388	**214**	RGP 30P
D37	8300779	**218**	1N 4531	D100	8300388	**214**	RGP 30P
D38	8300310	**209**	ZPD 10V 0.4W	D109	8300023	**209**	1N 4002

ST1	8300320	**207**	BTB 06

△ indicates that static electricity may destroy the component

R2	5230009	PTC 40–1000Ω 265V	R68	5020183	464Ω 1% 1/4W
R5	5021364	1.5kΩ 5% 2W	R70	5020940	348kΩ 1% 1/4W
R10	5011209	10MΩ 5%	R71	5020234	14.7kΩ 1% 1/4W
R16	5021301	10kΩ 1% 1/8W	R72	5370402	2.2kΩ 30% 0.3W
R17	5021445	54.9kΩ 1% 1/8W	R123	5021348	866Ω 1% 1/8W
R18	5021346	226kΩ 1% 1/8W	R127	5021300	0.22Ω 5% 1/4W
R37	5020803	3.3Ω 5% 2W	R142	5021299	0.47Ω 5% 1/4W
R38	5012074	0.47Ω 5% 1/4W	R143	5011801	1.8kΩ 1% 1/4W
R55	5020714	0.1Ω 10% 0.4W	R144	5021410	2.15MΩ 1% 1/4W
R57	5020697	22kΩ 5% 1W	R145	5011802	1.8kΩ 1% 1/4W
R64	5020367	499Ω 1% 1/4W			

C1	4130505	100nF 20% 250V	C49-	4010105	1nF 10% 50V
C2	4130098	100nF 20% 400V	C51		
C3-	4130169	47nF 20% 250V	C52	4200392	2200μF -20+50% 16V
C4			C53	4200612	1000μF -20+50% 25V
C5-	4010240	2.2nF 20% 400V	C56	4130230	100nF 20% 63V
C6			C58	4000153	33pF 5% 50V
C7-	4010104	220pF 10% 500V	C61	4200517	2.2μF 20% 50V
C8			C62	4130230	100nF 20% 63V
C9	4201114	150μF 20% 385V	C70	4130308	220nF 10% 63V
C10-	4010104	220pF 10% 500V	C71	4130499	15nF 20% 400V
C11			C72	4010123	1nF 10% 500V
C12	4130474	6.8nF 20% 630V	C73	4130230	100nF 20% 63V
C13	4010230	220pF 20% 1kV	C80	4130503	470nF 20% 100V
C14	4200525	22μF 20% 10V	C81	4130502	15nF 10% 250V
C15	4010106	10nF -20+80% 40V	C82	4200368	100μF -20+50% 63V
C17	4010105	1nF 10% 50V	C90	4010103	2.2nF 10% 50V
C18	4010118	330pF 10% 50V	C91	4010101	4.7nF 10% 50V
C19	4010107	22nF -20+80% 40V	C92	4010104	220pF 10% 500V
C20-	4010103	2.2nF 10% 50V	C100	4201157	220μF 20% 16V
C23			C101	4130495	2.2nF 5% 1500V
C24	4100209	470pF 5% 63V	C102	4130323	6.8nF 5% 1500V
C26	4100235	680pF 5% 63V	C103	4130325	18nF 5% 630V
C29	4200917	100μF -20+50% 40V	C104	4130349	300nF 5% 250V
C30	4010101	4.7nF 10% 50V	C105	4130326	560nF 5% 250V
C31	4200952	47μF 25V	C106	4010123	1nF 10% 500V
C32	4200512	1μF 20% 50V	C120-	4200704	470μF 20% 25V
C34-	4010106	10nF -20+80% 40V	C121		
C35			C129	4130525	4.7nF 20% 250V
C40-	4010104	220pF 10% 500V	C130	4200512	1μF 20% 50V
C41			C131	4200704	470μF 20% 25V
C42	4201113	100μF -20+50% 250V	C132	4200368	100μF -20+50% 63V
C43	4010105	1nF 10% 50V	C133	4130233	220nF 20% 63V
C44	4200704	470μF 20% 25V	C134	4200704	470μF 20% 25V
C45	4130523	15nF 20% 250V	C135-	4130233	220nF 20% 63V
C46	4200610	470μF 20% 63V	C136		
C47	4010105	1nF 10% 50V	C137	4200525	22μF 20% 10V
C48	4200612	1000μF -20+50% 25V	C138	4200243	100pF 5% 50V

L1	6850209	Coil 0.5μH	L6	8020325	Coil 10μH
L2	6850218	Coil 0.3μH	L7	8024052	Coil 260μH 1.5A
L3	8024045	Coil	L8	8020900	Coil 4.5mH-38μH
L4	8020901	Coil 10mH	L10	8020708	Coil 15μH
L5	6850195	Coil 1.3μH			

FE1-	6710023	Ferrite core
FE2		

F1	6600121	Fuse 3.15AT
	7500223	Holder

T1	8014113	Transformer EHT	T4	8014115	Transformer
T2	8014112	Transformer SMPS	T6	8022328	Mains filter
T3	8014121	Transformer			

CP1-	7500013	Contact pin
CP3		

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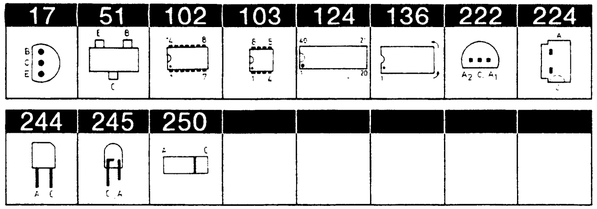


Resistors not referred to are standard, see page 3-22

S1	7220212	Plug 3/3 pole

P11	7220712	Plug 5/5 pole	P18	7220717	Plug 10/10 pole
P12	7220710	Plug 3/3 pole	P20	7220406	Plug 2/2 pole
P13	7220711	Plug 4/4 pole	P21	7220976	Plug 2/2 pole
P14	7220427	Plug 5/5 pole	P22	7220429	Plug 7/7 pole
P15	7220717	Plug 10/10 pole	P23	7220428	Plug 6/6 pole
P16	7220712	Plug 5/5 pole	P24	7220709	Plug 2/2 pole
P17	7220424	Plug 2/2 pole			

PCB 6, 8008133
Microcomputer 64K

PCB 6, 8008134
Microcomputer 64K AUS

IC1△	8341463	**136**	6264 8KX8	IC6△	8341125	**136**	2816B
IC2△	8341034	**124**	80C32	IC7△	8341233	**103**	TL 7705C
IC3△*	8342102	**136**	27C512-20	IC8△	8340373	**136**	4001B
	8342104	**136**	27C512-20AUS	IC9△	8341537	**136**	74HC138
	7200056		Socket f/IC3	IC11△	8340167	**102**	HEF 4001UB
IC4△	8341322	**124**	82C55A	IC12△	8340245	**102**	4011B
IC5△	8341046	**136**	74HC573				

TR2-	8320616	**51**	BC 858B	TR23-	8320615	**51**	BC 848B
TR3				TR24			
TR5-	8320616	**51**	BC 858B	TR26-	8320615	**51**	BC 848B
TR7				TR28			
TR8	8320615	**51**	BC 848B	TR30	8320747	**51**	BC 848C
TR9	8320740	**51**	BF 840	TR31-	8320615	**51**	BC 848B
TR10	8320616	**51**	BC 858B	TR32			
TR11-	8320615	**51**	BC 848B	TR33	8320616	**51**	BC 858B
TR12				TR34-	8320615	**51**	BC 848B
TR13	8320616	**51**	BC 858B	TR40			

D2-	8300520	**224**	ZPD6.8V 0.5W	D22	8300482	**250**	LL 4148
D3				D24-	8300482	**250**	LL 4148
D4-	8300482	**250**	LL 4148	D26			
D7				D27	8300520	**224**	ZPD6.8V 0.5W
D17	8300482	**250**	LL 4148	D28-	8300482	**250**	LL 4148
D18	8300520	**224**	ZPD6.8V 0.5W	D38			
D19	8300482	**250**	LL 4148				

C3-	4010166	100nF -20+80% 50V	C34	4010170	2.2nF 10% 50V
C9			C36	4000293	47pF 5% 50V
C10	4010170	2.2nF 10% 50V	C37	4010170	2.2nF 10% 50V
C17-	4010170	2.2nF 10% 50V	C39	4000293	47pF 5% 50V
C18			C40	4000287	220nF -20+80% 25V
C19	4010157	10nF 10% 50V	C41	4130315	15nF 5% 63V
C20	4010170	2.2nF 10% 50V	C46	4000286	470pF 5% 50V
C23-	4010170	2.2nF 10% 50V	C49	4010166	100nF -20+80% 50V
C26			C52	4010157	10nF 10% 50V
C28-	4010170	2.2nF 10% 50V	C53	4000287	220nF -20+80% 25V
C30			C54	4000233	220pF 5% 50V
C31	4000292	100pF 5% 50V	C56	4010177	22nF -20+80% 50V
C32	4000286	470pF 5% 50V	C57-	4000292	100pF 5% 50V
C33	4130313	470nF 20% 63V	C58		

⇨

△ indicates that static electricity may destroy the component.
*Specially selected or adapted sample.

C59	4000286	470pF 5% 50V	C85-	4010173	4.7nF 10% 50V
C64	4010170	2.2nF 10% 50V	C86		
C68-	4010170	2.2nF 10% 50V	C87-	4000278	27pF 5% 50V
C70			C88		
C71	4010157	10nF 10% 50V	C89	4000287	220nF -20+80% 25V
C72-	4010170	2.2nF 10% 50V	C90-	4000292	100pF 5% 50V
C73			C94		
C77-	4010170	2.2nF 10% 50V	C95-	4000286	470pF 5% 50V
C78			C96		
C79	4000287	220nF -20+80% 25V	C97	4000293	47pF 5% 50V
C80	4200510	10µF 20% 16V	C98-	4010166	100nF -20+80% 50V
C81	4000286	470pF 5% 50V	C99		
C84	4000286	470pF 5% 50V	C100	4000286	470pF 5% 50V

L1-	8020552	Coil 10µH 10%	L8	8020807	Coil 10µH 10%
L2					
L4-	8020552	Coil 10µH 10%			
L7					

BP1	8030056	Cer filter 455kHz ±1kHz

X1	8090075	Crystal 12MHz
X2	8030024	Resonator 455kHz ±1kHz

P70	7220709	Plug 2/2 pole	P73	7220713	Plug 6/6 pole
P71	7220718	Plug 11/11 pole	P74	7220714	Plug 7/7 pole
P72	7220710	Plug 3/3 pole	P75	7220715	Plug 8/8 pole

PCB 7, 8007609
Headphone

R1-	5020460	220Ω 5% 1W
R2		

C1-	4010041	10nF -20+80% 40V
C2		

S1-	7400318	Switch 1 pole
S2		

P86	7220429	Plug 7/7 pole
P98	7210802	Socket headphone 3.5mm

PCB 9, 8007789 IR Transceiver

TR1	8320740	**17**	BF 840	TR6	8320616	**51**	BC 858B
TR2	8320636	**51**	BC 849B	TR7	8320615	**51**	BC 848B
TR4	8320616	**51**	BC 858B	TR9	8320993	**51**	FMMT 589
TR5	8320993	**51**	FMMT 589				

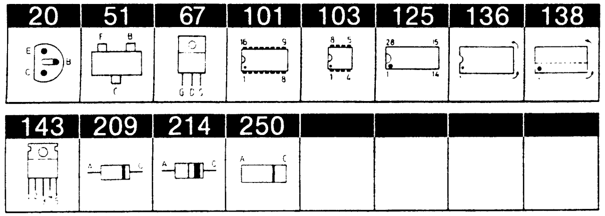
D3-	8330145	**244**	IR detector	D8	8330236	**222**	LED bi-colour
D4			455kHz		3152809		Holder f/D8
D5-	8330237	**245**	IR diode	D9	8330237	**245**	IR diode
D7							

R10	5011281	0.82Ω 5% 1/4W	R17	5210009	(LDR) 28kΩ
R12	5011281	0.82Ω 5% 1/4W			(50LUX)

C1-	4000286	470pF 5% 50V	C5-	4201120	220µF -20+50% 10V
C2			C6		
C3	4000234	47pF 5% 50V	C8-	4010166	100nF -20+80% 50V
C4	4000287	220nF -20+80% 25V	C10		

L1	8020910	Coil 220µH	L3	8020608	Coil 10µH 5%
L2	8020768	Coil 455kHz			

P85	7220716	Plug 9/9 pole



Resistors not referred to are standard, see page 3-22

PCB 10, 8007569 Sound Output

IC2-	8341236	**143**	TDA 2040
IC3			
	2622448		Mica washer
	2816195		Spring clip
IC4△	8320946	**67**	IRF Z22

D1-	8300779	**214**	1N 4531
D3			

R12	5020110	10kΩ 1% 1/4W
R21	5020229	9.53kΩ 1% 1/4W

C1	4130234	470nF 10% 63V	C13	4200600	470µF 20% 16V
C3	4010027	1nF 10% 50V	C14-	4130233	220nF 20% 63V
C4	4200617	47µF 20% 10V	C15		
C5	4200600	470µF 20% 16V	C17-	4201115	3300µF -20+50% 40V
C6	4130234	470nF 10% 63V	C18		
C8-	4130233	220nF 20% 63V	C19	4201143	10µF 20% 25V
C9			C20	4200516	47µF 20% 16V
C11	4010027	1nF 10% 50V	C21-	4130236	330nF 20% 63V
C12	4200617	47µF 20% 10V	C22		

L1-	6850114	Coil 0.5µH
L2		

P46	7220711	Plug 4/4 pole	P48	7220424	Plug 2/2 pole
P47	7220427	Plug 5/5 pole			

PCB 13, 8007579 Sync Processing

IC1	8341131	**136**	TDA 2579A
IC2	8341359	**136**	TDA 8432
IC5△	8340176	**136**	HEF 4013

TR1	8320510	**20**	BC 558B	TR7	8320510	**20**	BC 558B
TR2	8320509	**20**	BC 548B	TR8	8320509	**20**	BC 548B
TR3-	8320595	**20**	BC 337-40	TR9-	8320510	**20**	BC 558B
TR4				TR10			
TR5	8320509	**20**	BC 548B	TR11	8320509	**20**	BC 548B

D1-	8300779	**214**	1N 4531	D6-	8300779	**214**	1N 4531
D3				D9			
D4	8300201	**209**	ZPD 6.2V 0.4W	D12	8300779	**214**	1N 4531
D5	8300169	**209**	ZPD 5.1V 0.5W	D14	8300779	**214**	1N 4531

R22	5011745	33kΩ 1% 1/4W
R29	5011744	24kΩ 1% 1/4W
R38	5020114	11kΩ 1% 1/4W
R96	5011378	0.82Ω 5% 1/4W

△ indicates that static electricity may destroy the component.

C1	4200512	1µF 20% 50V	C21	4010106	10nF -20+80% 40V
C2	4010106	10nF -20+80% 40V	C22	4130233	220nF 20% 63V
C3-	4130230	100nF 20% 63V	C27	4000137	47pF 5% 63V
C5			C40	4200510	10µF 20% 16V
C6	4130313	470nF 20% 63V	C41	4200688	47µF 20% 50V
C7	4200544	22µF 20% 16V	C42	4000204	100pF 5% 63V
C8	4200517	2.2µF 20% 50V	C45	4200512	1µF 20% 50V
C9	4200616	6.8µF 20% 25V	C46	4010106	10nF -20+80% 40V
C10	4130230	100nF 20% 63V	C50	4200523	0.47µF 20% 50V
C12	4100289	2.7nF 1% 63V	C51	4130235	47nF 20% 63V
C13	4130230	100nF 20% 63V	C52	4010243	2.2nF 10% 500V
C14	4010105	1nF 10% 50V	C53	4010105	1nF 10% 50V
C15	4130303	15nF 10% 63V	C54	4200524	10µF 20% 25V
C16	4010106	10nF -20+80% 40V	C55-	4000136	22pF 5% 63V
C19	4130307	150nF 10% 63V	C56		
C20	4130313	470nF 20% 63V			

L2	8020916	Coil 47µH 450mA

P36	7220717	Plug 10/10 pole	P38	7220710	Plug 3/3 pole
P37	7220714	Plug 7/7 pole			

PCB 14, 8007479 Double AV Switch

IC1	8341037	**125**	TDA 8421	IC10△	8341059	**101**	4052
IC2△-	8341059	**101**	4052	IC11△-	8341022	**103**	4558
IC5△				IC14△			
IC6	8341167	**136**	TEA 5115	IC16△-	8341022	**103**	4558
IC8△	8341025	**138**	4094	IC17△			
IC9	8341795	**136**	TEA 6416				

TR1	8320523	**20**	BC 328-25	TR13	8320755	**51**	BC 847B
TR2-	8320512	**20**	BC 338-25	TR14	8320616	**51**	BC 858B
TR5				TR15	8320755	**51**	BC 847B
TR6	8320509	**20**	BC 548B	TR16-	8320936	**51**	BC 847C
TR7	8320936	**51**	BC 847C	TR17			
TR8	8320497	**20**	BC 547B	TR18	8320503	**20**	BC 557B
TR9	8320936	**51**	BC 847C	TR19	8320497	**20**	BC 547B
TR10	8320616	**51**	BC 858B	TR20-	8320811	**51**	BC 857B
TR11	8320552	**20**	BC 327-25	TR21			
TR12	8320578	**20**	BC 558C	TR22	8320936	**51**	BC 847C

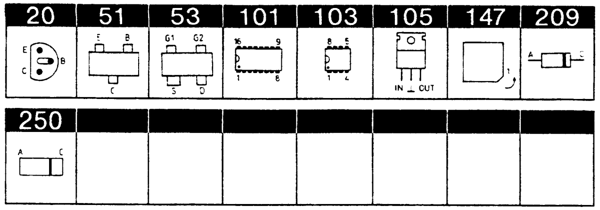
D2-	8300644	**250**	ZPD6.2V 0.5W	D15	8300478	**209**	BA 483
D3				D18	8300482	**250**	LL 4148
D4	8300779	**209**	1N 4531	D19	8300779	**209**	1N 4531
D5	8300482	**250**	LL 4148	D20-	8300635	**250**	BA 683
D6	8300029	**209**	ZPD12V 0.4W	D29			
D8	8300779	**209**	1N 4531	D30	8300482	**250**	LL 4148
D11	8300023	**209**	1N 4002	D31	8300779	**209**	1N 4531
D13	8300326	**209**	ZPD11V 0.4W	D32	8300482	**250**	LL 4148

R20	5021119	27Ω 5% 1W	R119	5020489	10Ω 10% 0.3W
R24	5020447	15Ω 5% 2W	R157-	5021145	76.8Ω 1% 1/4W
R27	5021197	39Ω 5% 1W	R160		
R32	5021197	39Ω 5% 1W			
R37-	5021145	76.8Ω 1% 1/4W			
R44					

C1-	4010175	33nF 10% 50V	C18-	4000345	1nF 5% 50V
C2			C19		
C3	4010101	4.7nF 10% 50V	C23	4000233	220pF 5% 50V
C4	4010173	4.7nF 10% 50V	C26	4000233	220pF 5% 50V
C7	4200628	100µF -20+50% 16V	C28-	4000233	220pF 5% 50V
C10	4200525	22µF 20% 10V	C29		
C11-	4130313	470nF 20% 63V	C30	4010166	100nF -20+80% 50V
C14			C33	4000233	220pF 5% 50V
C15-	4010166	100nF -20+80% 50V	C34	4010166	100nF -20+80% 50V
C17			C35	4130347	5.6nF 10% 63V

⇨

△ indicates that static electricity may destroy the component.



Resistors not referred to are standard, see page 3-22

C36-	4010166	100nF -20+80% 50V	C85-	4000287	220nF -20+80% 25V
C40			C87		
C42	4130306	100nF 10% 63V	C88-	4200525	22µF 20% 10V
C44	4130306	100nF 10% 63V	C89		
C46-	4000287	220nF -20+80% 25V	C90	4200600	470µF 20% 16V
C51			C91	4000233	220pF 5% 50V
C53	4201143	10µF 20% 25V	C94-	4010166	100nF -20+80% 50V
C54-	4000284	330pF 5% 50V	C95		
C57			C96-	4200515	4.7µF 20% 25V
C58-	4000287	220nF -20+80% 25V	C100		
C61			C101	4201143	10µF 20% 25V
C62-	4000284	330pF 5% 50V	C102-	4200515	4.7µF 20% 25V
C63			C103		
C64-	4000287	220nF -20+80% 25V	C104	4200826	10µF 20% 16V
C65			C105	4200510	10µF 20% 16V
C66-	4000284	330pF 5% 50V	C107	4010166	100nF -20+80% 50V
C67			C109	4200510	10µF 20% 16V
C68-	4000287	220nF -20+80% 25V	C110	4000287	220nF -20+80% 25V
C69			C111-	4010166	100nF -20+80% 50V
C70-	4010166	100nF -20+80% 50V	C112		
C73			C122	4010166	100nF -20+80% 50V
C74-	4000287	220nF -20+80% 25V	C124-	4010166	100nF -20+80% 50V
C75			C129		
C76-	4200517	2.2µF 20% 50V	C130	4200525	22µF 20% 10V
C77			C131	4010175	33nF 10% 50V
C78	4010176	10nF -20+80% 50V	C132-	4010166	100nF -20+80% 50V
C79	4000345	1nF 5% 50V	C136		
C80-	4200516	47µF 20% 16V	C139-	4200525	22µF 20% 10V
C81			C140		
C82-	4010157	10nF 10% 50V	C141	4000287	220nF -20+80% 25V
C83			C150	4000287	220nF -20+80% 25V
C84	4200617	47µF 20% 10V			

P18	3168760	Socket panel	P60	7220718	Plug 11/11 pole
P51	7220711	Plug 4/4 pole	P61	7220710	Plug 3/3 pole
P52	7220413	Plug 4/4 pole	P62	7220713	Plug 6/6 pole
P53	7220710	Plug 3/3 pole	P63	7220411	Plug 2/2 pole
P54	7220715	Plug 8/8 pole	P64	7220716	Plug 9/9 pole
P55	7220711	Plug 4/4 pole	P65	7220709	Plug 2/2 pole
P56	7220715	Plug 8/8 pole	P66	7220711	Plug 4/4 pole
P57	7220717	Plug 10/10 pole	P700	7220134	Plug 2/2 pole
P58	7220709	Plug 2/2 pole	P701	7220967	Plug 3/3 pole
P59	7220711	Plug 4/4 pole			

PCB 15, 8007739 St By Stabilization

IC1	8340212	**105**	78M05
	3358291		Heat sink

D1	8300556	**209**	ZPD 6.2V 1.3W

C1	4200512	1µF 20% 50V	C3	4200628	100µF -20+50% 16V
C2	4130230	100nF 20% 63V	C4	4130230	100nF 20% 63V

L1	8020934	Coil 10µH 10%

⇨

F1	6604036	Fuse 315mA 250V

P49-	7220424	Plug 2/2 pole	P79	7220711	Plug 4/4 pole
P50			P81	7220709	Plug 2/2 pole
P76	7220426	Plug 4/4 pole	P82	7220716	Plug 9/9 pole
P77	7220715	Plug 8/8 pole	P83	7220429	Plug 7/7 pole
P78	7220714	Plug 7/7 pole	P84	7220427	Plug 5/5 pole

PCB 17, 8007679 Transposer Interface (Accessories)

TR1	8320510	**20**	BC 558B
TR2	8320509	**20**	BC 548B

D1	8300596	**209**	ZPD6.2V 0.4W
D2	8300036	**209**	ZPD4.7V 0.4W

R5	5020093	4.64kΩ 1% 1/4W
R6	5020219	5.36kΩ 1% 1/4W

C1	4200524	10µF 20% 25V
C2	4010103	2.2nF 10% 50V

P99	7220710	Plug 3/3 pole
P100	7210660	Headphone socket 3.5mm

PCB 29, 8003719 Transposer (Accessories)

TR1	8320670	**51**	BFT 25	TR4	8320615	**51**	BC 848B
TR2	8320615	**51**	BC 848B	TR5	8320672	**51**	BFS 20
TR3	8320754	**53**	BF 992				

D1-	8300478	**209**	BA 483
D4			

C1-	4000342	1nF 10% 50V	C16	4000342	1nF 10% 50V
C7			C17	4000332	8.2pF ±0.5pF 50V
C8	4000337	1.8pF ±0.25pF 63V	C18	4000275	15pF 5% 50V
C9	4000276	18pF 5% 50V	C19	4000276	18pF 5% 50V
C10	4000229	150pF 5% 50V	C20	4000267	3pF ±0.25pF 50V
C11	4000278	27pF 5% 50V	C21	4000342	1nF 10% 50V
C12	4000331	6.8pF ±0.25pF 50V	C22	4000331	6.8pF ±0.25pF 50V
C13	4000274	12pF 5% 50V	C23	4000274	12pF 5% 50V
C14	4000330	5.6pF ±0.5pF 50V	C24	4000342	1nF 10% 50V
C15	4000337	1.8pF ±0.25pF 63V			

L1-	8020609	Coil 3.3µH	L5	6850175	Coil 52nH
L2			L6	6850174	Coil 860nH
L3	6850203	Coil 400nH	L7	6850202	Coil 235nH
L4	6850177	Coil 97nH	L8	6850179	Coil 58nH

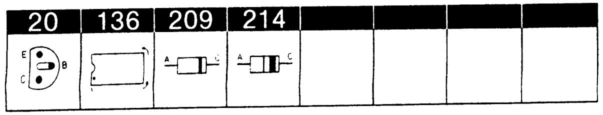
	7210589	Socket COAX, female		3164631	Cap, top
				3164635	Cap, bottom
	7220539	Socket COAX, male		6270386	Wire w/plug

PCB 31, 8007809 Nicam B/G/I

IC1	8340790	**103**	4558	IC5	8341225	**103**	LM 3578
IC2	8341724	**147**	SAA 7322	IC6	8341368	**103**	TL 026CP
IC3	8341308	**101**	74HC4053	IC7	8341754	**147**	CF 70088
IC4	8340790	**103**	4558				

TR3	8320595	**20**	BC 337-40
TR4	8320615	**51**	BC 848B

D1	8300817	**209**	1N 5819
D2	8300639	**250**	ZPD12V 0.5W
D3-	8300482	**250**	LL 4148
D4			



Resistors not referred to are standard, see page 3-22

R3	5020759	0.27Ω 5% 1/4W	R25	5012145	3.83kΩ 1% 1/8W
R10	5021301	10kΩ 1% 1/8W	R26	5012144	29.4kΩ 1% 1/8W
R11-R12	5021398	16.9kΩ 1% 1/8W	R27	5011557	10kΩ 1% 1/8W
R13-R14	5021368	162kΩ 1% 1/8W	R28	5012144	29.4kΩ 1% 1/8W
R17-R19	5011557	10kΩ 1% 1/8W	R29	5012145	3.83kΩ 1% 1/8W
R20-R21	5021367	47.5kΩ 1% 1/8W	R31	5020135	12Ω 10% 0.4W
R22-R24	5011557	10kΩ 1% 1/8W	R46	5011877	5.11kΩ 1% 1/8W
			R48	5011877	5.11kΩ 1% 1/8W
			R49	5020801	2.74kΩ 1% 1/4W
			R50	5011792	4.75kΩ 1% 1/8W

C1	4200760	220μF -20+50% 16V	C29	4130230	100nF 20% 63V
C2	4201187	10μF 20% 50V	C30	4010157	10nF 10% 50V
C3	4000345	1nF 5% 50V	C31	4010177	22nF -20+80% 50V
C4	4000233	220pF 5% 50V	C32-C34	4000326	680pF 5% 50V
C5-C8	4200512	1μF 20% 50V	C35	4010166	100nF -20+80% 50V
C9	4130262	22nF 20% 63V	C38	4010166	100nF -20+80% 50V
C10	4010177	22nF -20+80% 50V	C39	4010157	10nF 10% 50V
C11	4130268	10nF 5% 63V	C40	4000281	82pF 5% 50V
C12-C13	4010220	100nF 10% 50V	C41	4000345	1nF 5% 50V
C14-C15	4010209	47nF 10% 50V	C42	4010157	10nF 10% 50V
C16	4000284	330pF 5% 50V	C43-C44	4010166	100nF -20+80% 50V
C17	4000286	470pF 5% 50V	C45	4010177	22nF -20+80% 50V
C18	4130268	10nF 5% 63V	C46	4010157	10nF 10% 50V
C19	4000326	680pF 5% 50V	C47-C48	4010171	1.5nF 10% 50V
C20	4010209	47nF 10% 50V	C49	4200511	100μF 20% 10V
C21	4000284	330pF 5% 50V	C50-C51	4000239	33pF 5% 50V
C22	4000286	470pF 5% 50V	C52	4200525	22μF 20% 10V
C23	4000326	680pF 5% 50V	C53	4010166	100nF -20+80% 50V
C24	4000219	10pF 0.5pF 50V	C54-C56	4000219	10pF 0.5pF 50V
C26	4010157	10nF 10% 50V	C57	4010177	22nF -20+80% 50V
C27	4010177	22nF -20+80% 50V			
C28	4000239	33pF 5% 50V			

L1	8020759	Coil 1mH 10%
L2	8020672	Coil 33μH 10%
L3-L5	8020649	Coil 3.9μH 5%
L6	8020552	Coil 10μH 10%

X1	8090148	Crystal 16.384MHz

P94	7220713	Plug 6/6 pole	P96	7220712	Plug 5/5 pole
P95	7220710	Plug 3/3 pole	P97	7220711	Plug 4/4 pole

PCB 34, 8007617
Headphone MX 4000

R1-R2	5020460	220Ω 5% 1W

C1-C2	4010041	10nF -20+80% 40V

P86	7220429	Plug 7/7 pole	P98	7210802	Socket headphone 3.5mm
P87	7220710	Plug 3/3 pole			

PCB 36, 8007617
Deflection Transformer

R3	5011000	10Ω 5% 1/2W

T1	8014122	Transformer

S1-S2	7400318	Switch 1 pole

P88	7220710	Plug 3/3 pole	P93	7220430	Plug 8/8 pole
P92	7220429	Plug 7/7 pole			

PCB 37, 8007509 Teletext

IC1	8340720	**136**	SAA 5231	IC3	8341463	**136**	6264
IC2	8341068	**136**	SAA 5243				

TR1-TR2	8320509	**20**	BC 548B	TR7	8320595	**20**	BC 337-40
TR3	8320595	**20**	BC 337-40	TR8	8320509	**20**	BC 548B
TR5-TR6	8320509	**20**	BC 548B				

D1	8300296	**209**	ZPD 5.6V 0.4W
D2	8300779	**214**	1N 4531
D5	8300779	**214**	1N 4531

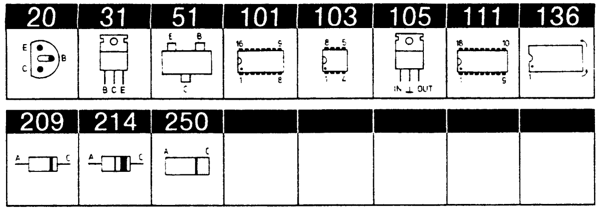
R11	5020591	6.8Ω 5% 2W	R45-R47	5011512	750Ω 1% 1/8W
R39-R41	5020569	1.3kΩ 1% 1/4W			
R42-R44	5011510	1kΩ 1% 1/8W			

C1	4200672	22μF 20% 16V	C13	4000139	100pF 5% 63V
C3	4200511	100μF 20% 10V	C14	4200616	6.8μF 20% 25V
C4	4200510	10μF 20% 16V	C15	4200512	1μF 20% 50V
C5	4000165	220pF 5% 63V	C16	4000140	27pF 5% 63V
C6	4130290	68nF 20% 63V	C17	4130230	100nF 20% 63V
C7-C8	4000146	15pF 5% 63V	C18	4010106	10nF -20+80% 40V
C9	4010105	1nF 10% 50V	C20-C21	4130230	100nF 20% 63V
C10	4010128	470pF 10% 50V	C26	4130308	220nF 10% 63V
C11	4130262	22nF 20% 63V	C27	4130240	47nF 10% 63V
C12	4010110	270pF 10% 50V	C28	4200512	1μF 20% 50V

L1	8020565	Coil 2.2μH 10%
L2	8020554	Coil 15μH 5%
L3	8020565	Coil 2.2μH 10%
L4	8020555	Coil 6MHz
L5-L6	8020916	Coil 47μH 450mA

X1	8090041	Crystal 13.875MHz

P40	7220712	Plug 5/5 pole
P41	7220713	Plug 6/6 pole
P42	7220715	Plug 8/8 pole
P43	7220710	Plug 3/3 pole



Resistors not referred to are standard, see page 3-22

PCB 38, 8007779
Tuner & IF Pal I

IC1	8341569	**136**	TDA 9820	IC8Δ	8340340	**101**	4053
IC3	8341137	**136**	TDA 8120	IC9	8340569	**103**	LM 358
IC4	8341142	**136**	TDA 8124	IC12	8341311	**103**	NE 567
IC6Δ	8341158	**136**	PCF 8574P	IC13Δ	8340602	**136**	4052
IC7	8340212	**105**	78M05				

TR1	8320509	**20**	BC 548B	TR17	8320510	**20**	BC 558B
TR2	8320369	**31**	BD 534	TR18-	8320509	**20**	BC 548B
	3358267		Heat sink	TR19			
			f/TR2	TR22	8320510	**20**	BC 558B
TR3	8320509	**20**	BC 548B	TR28	8320510	**20**	BC 558B
TR14-	8320509	**20**	BC 548B	TR31-	8320509	**20**	BC 548B
TR16				TR32			

D1	8300803	**214**	ZPD 33V 0.4W	D15	8300478	**209**	BA 483
D2	8300596	**209**	ZPD 6.2V	D21	8300779	**214**	1N 4531
D3	8300779	**214**	1N 4531	D23	8300779	**214**	1N 4531
D5-	8300779	**214**	1N 4531	D26	8300222	**209**	ZPD 2.7V 0.4W
D6							

R32	5021305	4.64kΩ 1% 1/8W	R167	5370432	470Ω 30% 0.3W
R33	5021306	5.36kΩ 1% 1/8W	R196	5370381	10kΩ 30% 0.1W
R56	5370381	10kΩ 30% 0.1W	R204	5370382	47kΩ 30% 0.1W
R99	5370370	4.7kΩ 30% 0.3W	R225	5030037	2 x 5.6kΩ +
R151	5021304	27kΩ 1% 1/8W			3 x 1kΩ SIL

C1-	4000136	22pF 5% 63V	C78	4010241	4.7nF 5% 50V
C2			C85	4130230	100nF 20% 63V
C3	4130313	470nF 20% 63V	C88-	4130230	100nF 20% 63V
C4	4200628	100μF -20+50% 16V	C89		
C5	4200544	22μF 20% 16V	C90	4010105	1nF 10% 50V
C33	4200510	10μF 20% 16V	C95	4130230	100nF 20% 63V
C36	4200544	22μF 20% 16V	C96	4200510	10μF 20% 16V
C41	4200512	1μF 20% 50V	C99-	4200510	10μF 20% 16V
C43	4010106	10nF -20+80% 40V	C100		
C44-	4200512	1μF 20% 50V	C102	4200510	10μF 20% 16V
C45			C103	4010106	10nF -20+80% 40V
C46	4200510	10μF 20% 16V	C104	4200510	10μF 20% 16V
C49	4000380	2.7pF ±0.25pF 50V	C105-	4200544	22μF 20% 16V
C50	4010105	1nF 10% 50V	C106		
C51	4200512	1μF 20% 50V	C107	4200510	10μF 20% 16V
C52-	4010105	1nF 10% 50V	C109	4100238	3.3nF 5% 63V
C53			C110	4130230	100nF 20% 63V
C56	4200512	1μF 20% 50V	C111	4200510	10μF 20% 16V
C69	4010105	1nF 10% 50V	C112	4000155	56pF 5% 63V
C70	4130262	22nF 20% 63V	C113-	4010106	10nF -20+80% 40V
C71	4130257	33nF 20% 63V	C114		
C72	4200517	2.2μF 20% 50V	C117	4130234	470nF 10% 63V
C73	4130230	100nF 20% 63V	C119	4130230	100nF 20% 63V
C75	4130347	5.6nF 10% 63V	C120	4000380	2.7pF ±0.25pF 50V
C76	4130313	470nF 20% 63V	C124	4130230	100nF 20% 63V
C77	4130311	680nF 10% 63V	C125	4010105	1nF 10% 50V

Δ indicates that static electricity may destroy the component.

L2	8020595	Coil 6.8μH 10%	L12	8020738	Coil 38.9MHz
L7	8020650	Coil 470nH 5%	L13	8022250	Coil 4.7mH 5%
L9	8020738	Coil 38.9MHz	L14	8020807	Coil 10μH 10%
L11	8020739	Coil 38.9MHz	L16	8020600	Coil 1μH 10%

BP3	8030033	Cer filter 6MHz

SW2	8030159	OFW J3251

TU1	8050137	Tuner UHF MTX

FE3-4	6000038	Ferrite core

X1	8090105	Crystal 10.0MHz

P1	7220713	Plug 6/6 pole	P6	7220709	Plug 2/2 pole
P2	7220710	Plug 3/3 pole	P7	7220711	Plug 4/4 pole
P3-	7220712	Plug 5/5 pole	P8	7220709	Plug 2/2 pole
P4			P9	7220711	Plug 4/4 pole
P5	7220710	Plug 3/3 pole			

PCB 39, 8008023 Pal Decoder

IC2	8341531	**101**	TDA 4510	IC5	8341193	**101**	TDA 8444
IC3Δ	8341728	**101**	TDA 4661	IC6	8341933	**111**	TDA 4565
IC4	8341725	**136**	TDA 3505				

TR1-	8320811	**51**	BC 857B	TR25-	8320498	**20**	BC 547C
TR2				TR27			
TR4-	8320811	**51**	BC 857B	TR29	8320811	**51**	BC 857B
TR5				TR30-	8320936	**51**	BC 847C
TR6	8320755	**51**	BC 847B	TR32			
TR7	8320811	**51**	BC 857B	TR35	8320595	**20**	BC 337-40
TR8	8320755	**51**	BC 847B	TR36	8320747	**51**	BC 848C
TR12	8320936	**51**	BC 847C				
TR22-	8320811	**51**	BC 857B				
TR23							

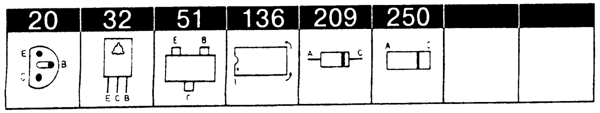
D1	8300482	**250**	LL 4148	D28-	8300482	**250**	LL 4148
D3-	8300478	**209**	BA 483	D34			
D4				D35	8300605	**250**	ZPD10V 0.5W
D25	8300563	**250**	ZPD5.1V 0.5W	D37-	8300482	**250**	LL 4148
D26	8300482	**250**	LL 4148	D41			
D27	8300723	**250**	ZPD8.2V 0.5W				

R6	5011740	332Ω 1% 1/8W	R100	5011841	11.8kΩ 1% 1/8W
R8	5012154	1kΩ 1% 1/8W	R102	5011600	100kΩ 1% 1/8W
R11	5012131	316Ω 1% 1/8W	R105	5011839	180kΩ 1% 1/8W
R15	5011842	1.05kΩ 1% 1/8W	R107	5011599	49.9kΩ 1% 1/8W
R17	5011871	365Ω 1% 1/8W	R108	5021346	226kΩ 1% 1/8W
R25	5011871	365Ω 1% 1/8W	R110	5011996	8.25kΩ 1% 1/8W
R60	5011914	5.1kΩ 1% 1/8W	R116	5011600	100kΩ 1% 1/8W
R93	5011570	200Ω 1% 1/8W	R157	5011378	0.82Ω 5% 1/4W

C1	4200672	22μF 20% 16V	C11	4000332	8.2pF 0.5pF 50V
C2	4200525	22μF 20% 10V	C12-	4130070	1μF 10% 50V
C3	4201171	1μF 20% 50V	C13		
C5	4000168	120pF 5% 63V	C15-	4000242	120pF 5% 50V
C6	4200510	10μF 20% 16V	C16		
C7	4010166	100nF -20+80% 50V	C17	4130070	1μF 10% 50V
C8	4130070	1μF 10% 50V	C18	4130236	330nF 20% 63V
C9	4000219	10pF 0.5pF 50V	C19	4200508	22μF 20% 25V
C10	4000233	220pF 5% 50V			

⇨

Δ indicates that static electricity may destroy the component.



Resistors not referred to are standard, see page 3-22

PCB 40, 8007859
Picture-in-picture
for MX 4000
(Accessories)

C20-	4130236	330nF 20% 63V
C21		
C22	4000241	100pF 5% 50V
C23	4130230	100nF 20% 63V
C24	4000279	39pF 5% 50V
C25	4000241	100pF 5% 50V
C26	4000280	68pF 5% 50V
C27	4000233	220pF 5% 50V
C30	4000233	220pF 5% 50V
C36	4000239	33pF 5% 50V
C37	4000284	330pF 5% 50V
C41	4010155	220pF 10% 50V
C42	4130230	100nF 20% 63V
C44	4000276	18pF 5% 50V
C48	4340034	7.5-50pF
C49	4000278	27pF 5% 50V
C50	4130236	330nF 20% 63V
C51	4010209	47nF 10% 50V
C53	4000290	22nF 10% 50V
C56	4010157	10nF 10% 50V
C57	4200600	470μF 20% 16V
C58	4010157	10nF 10% 50V
C73-	4010166	100nF -20+80% 50V
C74		
C75	4000241	100pF 5% 50V
C77	4000241	100pF 5% 50V
C79	4010157	10nF 10% 50V
C80	4010166	100nF -20+80% 50V
C81	4000290	22nF 10% 50V
C82	4200403	100μF -20+50% 25V
C92-	4000290	22nF 10% 50V
C97		
C98-	4000287	220nF -20+80% 25V
C101		
C104-	4010106	10nF -20+80% 40V
C105		
C108	4000287	220nF -20+80% 25V
C109	4200544	22μF 20% 16V
C111	4200517	2.2μF 20% 50V
C112-	4200510	10μF 20% 16V
C113		
C114	4200672	22μF 20% 16V
C115	4010157	10nF 10% 50V
C118	4200510	10μF 20% 16V
C122-	4000326	680pF 5% 50V
C124		
C125	4000287	220nF -20+80% 25V
C126	4010132	1nF 10% 50V
C127	4010172	3.3nF 10% 50V
C128	4000281	82pF 5% 50V
C129-	4000241	100pF 5% 50V
C132		
C135	4200403	100μF -20+50% 25V

L1	8020749	Coil 10μH
L2-	8020595	Coil 6.8μH 10%
L3		
L4	8020554	Coil 15μH 5%
L5	8020595	Coil 6.8μH 10%
L21	8020649	Coil 3.9μH 5%
L35	8020916	Coil 47μH

X2	8090005	Crystal 8.8672MHz

CP10	7500013	Contact pin

P26	7220715	Plug 8/8 pole
P27	7220711	Plug 4/4 pole
P28	7220713	Plug 6/6 pole
P29	7220714	Plug 7/7 pole
P30	7220715	Plug 8/8 pole
P31	7220709	Plug 2/2 pole
P35	7220710	Plug 3/3 pole

IC1	8341191	**136**	TEA 5640C
IC2△	8341230	**136**	4060
IC3	8341131	**136**	TDA 2579A
IC6	8341363	**136**	TDA 8443A
IC7	8341646	**136**	SDA 9086-3
IC8	8341442	**136**	SDA 9087
IC9	8341443	**136**	SDA 9088

TR1	8320509	**20**	BC 548B
TR2	8320239	**32**	BD 135
TR3	8320615	**51**	BC 848B
TR4-	8320509	**20**	BC 548B
TR5			
TR13-	8320509	**20**	BC 548B
TR14			
TR17	8320509	**20**	BC 548B
TR18	8320510	**20**	BC 558B
TR20	8320510	**20**	BC 558B
TR21	8320509	**20**	BC 548B
TR22	8320510	**20**	BC 558B
TR23	8320239	**32**	BD 135

⇨

△ indicates that static electricity may destroy the component.

D1	8300173	**209**	ZPD8.2V 0.4W
D2-	8300482	**250**	LL 4148
D3			
D4	8300169	**209**	ZPD5.1V 0.4W
D5-	8300482	**250**	LL 4148
D7			
D8	8300201	**209**	ZPD6.2V 0.4W
D9-	8300482	**250**	LL 4148
D14			
D16	8300296	**209**	ZPD5.6V 0.4W
D17	8300023	**209**	1N 4002
D18	8300058	**209**	1N 4148
D19	8300482	**250**	LL 4148
D21	8300058	**209**	1N 4148

R5	5011555	1.82kΩ 1% 1/8W
R123	5020704	34.8kΩ 1% 1/4W
R133	5020495	10Ω 5% 1W
R140	5020480	1Ω 5% 1W
R149-	5020480	1Ω 5% 1W
R150		
R151	5020727	18Ω 5% 1W

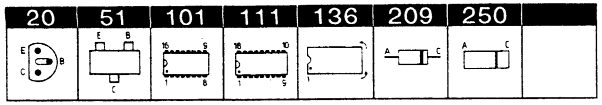
C1	4000287	220nF -20+80% 25V
C2-	4010157	10nF 10% 50V
C3		
C4	4000290	22nF 10% 50V
C5	4200512	1μF 20% 50V
C6	4000229	150pF 5% 50V
C7	4200511	100μF 20% 10V
C8	4000229	150pF 5% 50V
C9	4130313	470nF 20% 63V
C10	4000345	1nF 5% 50V
C11	4000280	68pF 5% 50V
C12	4000281	82pF 5% 50V
C13	4010166	100nF -20+80% 50V
C14	4200516	47μF 20% 16V
C15	4000279	39pF 5% 50V
C16	4010166	100nF -20+80% 50V
C17	4000279	39pF 5% 50V
C18	4200512	1μF 20% 50V
C19	4200508	22μF 20% 25V
C20	4010166	100nF -20+80% 50V
C21	4200515	4.7μF 20% 25V
C22-	4010166	100nF -20+80% 50V
C24		
C25	4200516	47μF 20% 16V
C26	4100289	2.7nF 1% 63V
C27	4000155	56pF 5% 63V
C28	4200831	470μF 20% 10V
C29	4000233	220pF 5% 50V
C30	4000242	120pF 5% 50V
C31	4000278	27pF 5% 50V
C32	4010107	22nF -20+80% 40V
C33	4000278	27pF 5% 50V
C34	4010107	22nF -20+80% 40V
C35	4000140	27pF 5% 63V
C37	4000239	33pF 5% 50V
C38	4000241	100pF 5% 50V
C39	4010157	10nF 10% 50V
C40	4000290	22nF 10% 50V
C41	4200672	22μF 20% 16V
C46	4000287	220nF -20+80% 25V
C47-	4010166	100nF -20+80% 50V
C49		
C50-	4130230	100nF 20% 63V
C52		
C53-	4000234	47pF 5% 50V
C54		
C55	4000240	56pF 5% 50V
C56	4200544	22μF 20% 16V
C57	4000233	220pF 5% 50V
C58	4010166	100nF -20+80% 50V
C59	4010175	33nF 10% 50V
C63	4010166	100nF -20+80% 50V
C64	4200517	2.2μF 20% 50V
C65-	4010166	100nF -20+80% 50V
C66		
C67	4000282	180pF 5% 50V
C68	4200512	1μF 20% 50V
C69	4000283	270pF 5% 50V
C70	4200512	1μF 20% 50V
C71-	4010166	100nF -20+80% 50V
C72		
C73-	4000233	220pF 5% 50V
C74		
C77	4010166	100nF -20+80% 50V
C79-	4010166	100nF -20+80% 50V
C80		
C85-	4000278	27pF 5% 50V
C87		
C88	4200512	1μF 20% 50V
C91	4000204	100pF 5% 63V
C92	4000138	33pF 5% 63V
C93	4010155	220pF 10% 50V
C95-	4010128	470pF 10% 50V
C96		
C97-	4130306	100nF 10% 63V
C99		
C100	4200600	470μF 20% 16V
C101	4200510	10μF 20% 16V

L1	8020608	Coil 10μH 5%
L2	8020552	Coil 10μH 10%
L3	8020830	Coil 10μH
L4	8020608	Coil 10μH 5%
L5-	8020916	Coil 47μH
L6		

DL1	6240012	Delay line 64μS

X1	8090000	Crystal 4.00MHz

P107	7220717	Plug 10/10 pole
P108	7220712	Plug 5/5 pole



Resistors not referred to are standard, see page 3-22

PCB 41, 8008062
Pal/Secam/NTSC Decoder

IC1	8341726	**101**	TDA 4650	IC5	8341193	**101**	TDA 8444
IC3△	8341728	**101**	TDA 4661	IC6	8341933	**111**	TDA 4565
IC4	8341725	**136**	TDA 3505				

TR1-	8320811	**51**	BC 857B	TR22-	8320811	**51**	BC 857B
TR2				TR23			
TR3	8320755	**51**	BC 847B	TR25-	8320498	**20**	BC 547C
TR4-	8320811	**51**	BC 857B	TR27			
TR5				TR29	8320811	**51**	BC 857B
TR6	8320755	**51**	BC 847B	TR30-	8320936	**51**	BC 847C
TR7	8320811	**51**	BC 857B	TR32			
TR8	8320755	**51**	BC 847B	TR35	8320595	**20**	BC 337-40
TR12	8320936	**51**	BC 847C	TR36	8320747	**51**	BC 848C
TR15-	8320936	**51**	BC 847C				
TR16							

D1	8300482	**250**	LL 4148	D25	8300563	**250**	ZPD5.1V 0.5W
D2	8300577	**250**	ZPD3.9V 0.5W	D26	8300482	**250**	LL 4148
D3-	8300478	**209**	BA 483	D27	8300723	**250**	ZPD8.2V 0.5W
D4				D28-	8300482	**250**	LL 4148
D10-	8300482	**250**	LL 4148	D34			
D11				D35	8300605	**250**	ZPD10V 0.5W
D13	8300482	**250**	LL 4148	D37-	8300482	**250**	LL 4148
D17-	8300482	**250**	LL 4148	D41			
D18							

R6	5011740	332Ω 1% 1/8W	R100	5011841	11.8kΩ 1% 1/8W
R8	5012154	1kΩ 1% 1/8W	R102	5011600	100kΩ 1% 1/8W
R11	5012131	316Ω 1% 1/8W	R105	5011839	180kΩ 1% 1/8W
R15	5011842	1.05kΩ 1% 1/8W	R107	5011599	49.9kΩ 1% 1/8W
R17	5011871	365Ω 1% 1/8W	R108	5021346	226kΩ 1% 1/8W
R25	5011871	365Ω 1% 1/8W	R110	5011996	8.25kΩ 1% 1/8W
R65	5370402	2.2kΩ 30% 0.3W	R116	5011600	100kΩ 1% 1/8W
R93	5011570	200Ω 1% 1/8W	R157	5011378	0.82Ω 5% 1/4W

C1	4200672	22μF 20% 16V	C26	4000280	68pF 5% 50V
C2	4200525	22μF 20% 10V	C27	4000233	220pF 5% 50V
C3	4201171	1μF 20% 50V	C30	4000233	220pF 5% 50V
C4	4000281	82pF 5% 50V	C32	4000233	220pF 5% 50V
C5	4000168	120pF 5% 63V	C33	4010157	10nF 10% 50V
C6	4200510	10μF 20% 16V	C36	4000239	33pF 5% 50V
C7	4010166	100nF -20+80% 50V	C37	4000284	330pF 5% 50V
C8	4130070	1μF 10% 50V	C38-	4000345	1nF 5% 50V
C9	4000219	10pF 0.5pF 50V	C39		
C10	4000233	220pF 5% 50V	C40	4000344	560pF 5% 50V
C11	4000332	8.2pF 0.5pF 50V	C41	4010155	220pF 10% 50V
C12-	4130070	1μF 10% 50V	C42	4130230	100nF 20% 63V
C13			C44-	4000276	18pF 5% 50V
C15-	4000242	120pF 5% 50V	C45		
C16			C46	4340034	7.5-50pF
C17	4130070	1μF 10% 50V	C47	4000239	33pF 5% 50V
C18	4130236	330nF 20% 63V	C48	4340034	7.5-50pF
C19	4200508	22μF 20% 25V	C49	4000278	27pF 5% 50V
C20-	4130236	330nF 20% 63V	C50	4130236	330nF 20% 63V
C21			C51	4010209	47nF 10% 50V
C22	4000241	100pF 5% 50V	C52	4010166	100nF -20+80% 50V
C23	4130230	100nF 20% 63V	C53-	4000290	22nF 10% 50V
C24	4000279	39pF 5% 50V	C54		
C25	4000241	100pF 5% 50V	C55	4000345	1nF 5% 50V

⇨

△ indicates that static electricity may destroy the component.

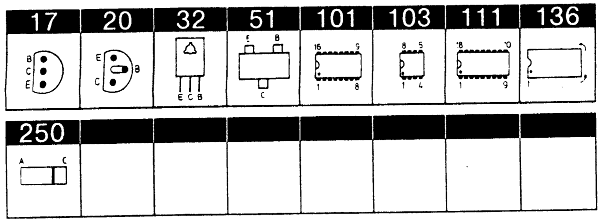
C56	4010157	10nF 10% 50V	C98-	4000287	220nF -20+80% 25V
C57	4200600	470μF 20% 16V	C101		
C58	4010157	10nF 10% 50V	C104-	4010106	10nF -20+80% 40V
C59	4000275	15pF 5% 50V	C105		
C60	4000229	150pF 5% 50V	C108	4000287	220nF -20+80% 25V
C61	4000226	68pF 5% 63V	C109	4200544	22μF 20% 16V
C62	4000229	150pF 5% 50V	C111	4200517	2.2μF 20% 50V
C63	4000275	15pF 5% 50V	C112-	4200510	10μF 20% 16V
C64-	4010166	100nF -20+80% 50V	C113		
C65			C114	4200672	22μF 20% 16V
C66-	4000233	220pF 5% 50V	C115	4010157	10nF 10% 50V
C67			C118	4200510	10μF 20% 16V
C68	4000240	56pF 5% 50V	C122-	4000326	680pF 5% 50V
C73-	4010166	100nF -20+80% 50V	C124		
C74			C125	4000287	220nF -20+80% 25V
C75	4000241	100pF 5% 50V	C126	4010132	1nF 10% 50V
C77	4000241	100pF 5% 50V	C127	4010172	3.3nF 10% 50V
C79	4010157	10nF 10% 50V	C128	4000281	82pF 5% 50V
C80	4010166	100nF -20+80% 50V	C129-	4000241	100pF 5% 50V
C81	4000290	22nF 10% 50V	C132		
C82	4200403	100μF -20+50% 25V	C135	4200403	100μF -20+50% 25V
C92-	4000290	22nF 10% 50V			
C97					

L1	8020749	Coil 10μH
L2-	8020595	Coil 6.8μH 10%
L3		
L4	8020554	Coil 15μH 5%
L5	8020595	Coil 6.8μH 10%
L21	8020649	Coil 3.9μH 5%
L22	8020741	Coil 5.5MHz
L25	8020749	Coil 10μH
L35	8020916	Coil 47μH

X1	8090140	Crystal 7.15909MHz
X2	8090005	Crystal 8.8672MHz

CP10	7500013	Contact pin

P26	7220715	Plug 8/8 pole
P27	7220711	Plug 4/4 pole
P28	7220713	Plug 6/6 pole
P29	7220714	Plug 7/7 pole
P30	7220715	Plug 8/8 pole
P31	7220709	Plug 2/2 pole
P35	7220710	Plug 3/3 pole



Resistors not referred to are standard, see page 3-22

PCB 47, 8008053
Picture-in-Picture
(Accessories)

IC1	8341131	**111**	TDA 2579A
IC2	8341363	**136**	TDA 8443A
IC3	8341646	**103**	SDA 9086-3
IC4	8341726	**136**	TDA 4650
IC5	8341728	**101**	TDA 4661
IC6	8341442	**136**	SDA 9087
IC7	8341443	**136**	SDA 9088

TR1-	8320615	**51**	BC 848B
TR2			
TR3	8320616	**51**	BC 858B
TR4	8320497	**20**	BC 547B
TR5	8320626	**17**	BC 368
TR6	8320752	**51**	BC 817-40
TR9-	8320747	**51**	BC 848C
TR10			
TR11	8320616	**51**	BC 858B
TR12	8320615	**51**	BC 848B
TR13	8320943	**32**	D135-16

D1	8300677	**250**	ZPD4.7V 0.5W
D2-	8300482	**250**	LL 4148
D4			
D5	8300644	**250**	ZPD6.2V 0.5W
D6-	8300482	**250**	LL 4148
D19			
D20	8300563	**250**	ZPD5.1V 0.4W
D21-	8300562	**250**	ZPD5.6V 0.4W
D22			
D23-	8300482	**250**	LL 4148
D24			

R54	5021026	34.8kΩ 1% 1/8W
R64	5021151	1.5Ω 1% 1/4W
R66	5020460	220Ω 5% 1W
R68	5012074	0.47Ω 5% 1/4W
R105	5370402	2.2kΩ 30% 0.3W
R110	5020480	1Ω 5% 1W

C1	4200512	1μF 20% 50V
C2	4200508	22μF 20% 25V
C3	4010166	100nF -20+80% 50V
C4	4200616	6.8μF 20% 25V
C5-	4010166	100nF -20+80% 50V
C7		
C8	4200952	47μF -20+50% 25V
C9	4100289	2.7nF 1% 63V
C10	4200704	470μF 20% 25V
C11	4000234	47pF 5% 50V
C14	4010177	22nF -20+80% 50V
C16	4000239	33pF 5% 50V
C17	4010166	100nF -20+80% 50V
C18	4010157	10nF 10% 50V
C19	4000290	22nF 10% 50V
C20	4200524	10μF 20% 25V
C21	4000287	220nF -20+80% 25V
C22-	4010166	100nF -20+80% 50V
C27		
C28-	4000234	47pF 5% 50V
C29		
C30	4000240	56pF 5% 50V
C31	4200544	22μF 20% 16V
C32	4000233	220pF 5% 50V
C33	4010166	100nF -20+80% 50V
C34	4010175	33nF 10% 50V
C35	4010166	100nF -20+80% 50V
C36	4010175	33nF 10% 50V
C37-	4010166	100nF -20+80% 50V
C38		
C39	4000282	180pF 5% 50V
C40	4000290	22nF 10% 50V

⇨

C41	4000283	270pF 5% 50V
C42	4200512	1μF 20% 50V
C43-	4010166	100nF -20+80% 50V
C44		
C45-	4000233	220pF 5% 50V
C46		
C48-	4010166	100nF -20+80% 50V
C49		
C54	4000239	33pF 5% 50V
C56-	4000286	470pF 5% 50V
C57		
C58-	4010166	100nF -20+80% 50V
C60		
C61	4200510	10μF 20% 16V
C62	4200704	470μF 20% 25V
C63	4200917	100μF -20+50% 40V
C64	4000233	220pF 5% 50V
C65	4010157	10nF 10% 50V
C66	4000239	33pF 5% 50V
C67	4000284	330pF 5% 50V
C68-	4000345	1nF 5% 50V
C69		
C70	4000344	560pF 5% 50V
C71	4000233	220pF 5% 50V
C72	4130236	330nF 20% 63V
C73-	4000276	18pF 5% 50V
C74		
C75	4340034	7.5-50pF
C76	4000279	39pF 5% 50V
C77	4340034	7.5-50pF
C78	4000239	33pF 5% 50V
C79	4130236	330nF 20% 63V
C80	4010209	47nF 10% 50V
C81	4010166	100nF -20+80% 50V
C82-	4000290	22nF 10% 50V
C83		
C84	4000345	1nF 5% 50V
C85	4010157	10nF 10% 50V
C86	4200704	470μF 20% 25V
C87	4010157	10nF 10% 50V
C88	4000275	15pF 5% 50V
C89	4000229	150pF 5% 50V
C90	4000280	68pF 5% 50V
C91	4000229	150pF 5% 50V
C92	4000275	15pF 5% 50V
C93-	4010166	100nF -20+80% 50V
C94		
C95-	4000233	220pF 5% 50V
C96		
C97	4000240	56pF 5% 50V
C98-	4010220	100nF 10% 50V
C99		
C100-	4000241	100pF 5% 50V
C101		
C102	4010157	10nF 10% 50V
C103	4010166	100nF -20+80% 50V
C104	4000290	22nF 10% 50V
C105	4200511	100μF 20% 10V

L1	8020608	Coil 10μH 5%
L2	8020830	Coil 10μH
L3	8020916	Coil 47μH
L4	8020649	Coil 3.9μH 5%
L5	8020741	Coil 5.5MHz 2.6μH
L6	8020749	Coil 10μH

X1	8090140	Crystal 7.15909MHz
X2	8090005	Crystal 8.8672MHz

P107	7220717	Plug 10/10 pole
P108	7220712	Plug 5/5 pole

Resistors not referred to are standard, see page 3-22

Crossover network, LX 5000
8039096, right
8039093, left

R1	5020803	3.3Ω 5% 2W
R3	5020447	15Ω 5% 2W
C1	4200560	2.2μF 20% 23V
L1	6850144	Coil 330μH
L2	6850142	Coil 150μH
P49	7210326	Plug 2/2 pole, right
P50	7210326	Plug 2/2 pole, left

Crossover network, LX 6000
8007992, right
8007919, left

R1	5021152	10Ω 5% 2W
R2	5021152	10Ω 5% 2W
R3	5020781	2.2Ω 5% 2W
C1	4200387	4.7μF 20% 23V
C2	4200336	6.8μF 20% 23V
L1	6850220	Coil 800μH
P49	7210326	Plug 2/2 pole, right
P50	7210326	Plug 2/2 pole, left

Crossover network, MX 6000
8007703

R1	5021152	10Ω 5% 2W
R2	5021152	10Ω 5% 2W
R3	5020781	2.2Ω 5% 2W
C1	4200336	6.8μF 20% 23V
C2	4200682	8.2μF 10% 35V
L1	6850205	Coil 560μH
P49	7210326	Plug 2/2 pole, right
P50	7210326	Plug 2/2 pole, left

Beolink 1000

For remote control Beolink 1000, see the service manual "MASTER CONTROL LINK", no. 3538711 page 1-15.

Standard Resistors:
Resistors 5% 1/2 W

	x1	x10	x100	x1K	x10K	x100K	x1M	x10M
1.0		5011000	5011013	5011028	5011044	5010313	5011069	5011083
1.2	5011406	5011001	5011014	5011030	5011045	5011058	5010421	
1.5	5010727	5011002	5011015	5011031	5011046	5011059	5011071	
1.8	5010857	5010787	5011016	5011033	5011047		5011072	
2.2	5011335	5010708	5010815	5011034	5011048	5011061	5011074	
2.7	5011612	5010803	5011018	5010055	5011049	5011062	5011075	
3.3	5010255	5011007	5011019	5011037		5011063	5010381	
3.9		5010782	5011021	5010700	5011051		5010392	
4.7	5010765	5011009	5011022	5010035	5010036	5011065	5011078	
5.6		5011010	5011023	5011041		5011066	5011079	
6.8	5010874	5011011	5011024	5011042	5010810	5011067	5011080	
8.2		5011012	5011026	5011043	5010038	5011068	5011081	

Resistors 5% 1/4 W

	x1	x10	x100	x1K	x10K	x100K	x1M	x10M
1.0	5010592	5010506	5010065	5010040	5010059	5010049	5010054	5010638
1.2		5010595	5010128	5010153	5010046	5010047	5010665	
1.5	5011348	5010468	5010057	5010247	5010053	5010063	5010093	
1.8		5010822	5010362	5010066	5010135	5010072	5010791	
2.2	5010682	5010448	5010092	5010064	5010079	5010120	5010245	
2.7	5010925	5010403	5010000	5010298	5010141	5010083	5010431	
3.3		5010253	5010044	5010076	5010075	5010117	5010848	
3.9	5011377	5010622	5010070	5010069	5010060	5010073	5010714	
4.7	5010888	5010411	5010058	5010048	5010045	5010077	5011513	
5.6	5010706	5010151	5010067	5010041	5010061	5010071	5010658	
6.8	5010904	5010039	5010144	5010052	5010062	5010074		
8.2	5010880	5010056	5010068	5010154	5010091	5010505		

Resistors 5% 1/8 W

	x1	x10	x100	x1K	x10K	x100K	x1M	x10M
1.0		5011464	5011357	5010816	5010935	5011440	5011459	5020875
1.2		5011351	5011084	5011442	5011338	5011341	5011175	
1.5		5011463	5011443	5011178	5011364	5011398	5011460	
1.8			5011350	5011361	5011344	5011468		
2.2	5011032	5011376	5010886	5011353	5010833	5011369	5011342	
2.7		5011471	5011355	5011362	5011366	5011370	5011478	
3.3		5011347	5011337	5010827	5011346	5011371	5011462	
3.9		5011438	5011817	5011157	5011457	5011372	5020876	
4.7	5011363	5011038	5011441	5011363	5010937	5011343	5011611	
5.6		5011412	5011358	5010885	5011166	5011340		
6.8		5011356	5011336	5010839	5011367	5011458		
8.2		5011466	5011354	5011339	5011368	5011373		

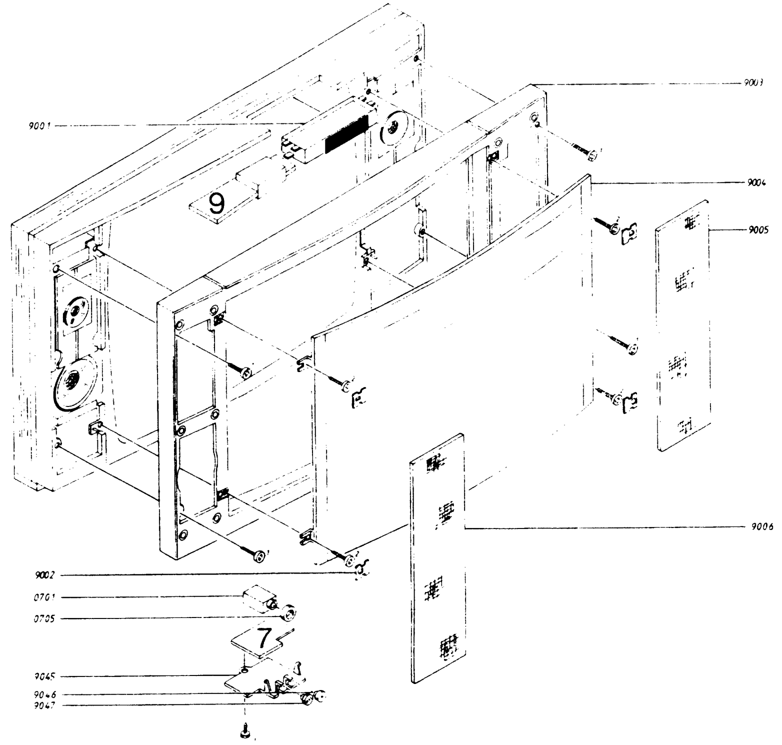
Resistors SMD 2% 1/8 W
SMD 5% 1/8 W

	5%	2%	2%	2%	2%	2%	5%	5%
	x1	x10	x100	x1K	x10K	x100K	x1M	x10M
1.0	5011623	5011647	5011218	5011227	5011241	5011256	5011267	5011730
1.1	5011624	5011648	5011669	5011681	5011689	5011694	5011707	
1.2	5011625	5011649	5011219	5011682	5011490	5011257	5011708	
1.3	5011626	5011650	5011670	5011683	5011242	5011258	5011709	
1.5	5011627	5011651	5011220	5011228	5011243	5011259	5011710	
1.6	5011628	5011652	5011671	5011684	5011690	5011695	5011711	
1.8	5011629	5011653	5011672	5011229	5011244	5011260	5011712	
2.0	5011630	5011654	5011673	5011685	5011691	5011696	5011713	
2.2	5011216	5011655	5011674	5011230	5011245	5011261	5011714	
2.4	5011634	5011656	5011675	5011686	5011246	5011697	5011715	
2.7	5011635	5011657	5011497	5011231	5011247	5011262	5011716	
3.0	5011731	5011658	5011499	5011500	5011692	5011698	5011717	
3.3	5011217	5011659	5011676	5011232	5011248	5011263	5011718	
3.6	5011636	5011660	5011677	5011687	5011249	5011264	5011719	
3.9	5011637	5011661	5011221	5011233	5011491	5011699	5011720	
4.3	5011638	5011662	5011498	5011688	5011492	5011700	5011721	
4.7	5011639	5011269	5011222	5011234	5011250	5011265	5011722	
5.1	5011640	5011663	5011678	5011235	5011493	5011701	5011723	
5.6	5011641	5011664	5011223	5011236	5011251	5011702	5011724	
6.2	5011642	5011665	5011224	5011237	5011693	5011703	5011725	
6.8	5011643	5011666	5011225	5011238	5011252	5011704	5011726	
7.5	5011644	5011667	5011679	5011239	5011253	5011705	5011727	
8.2	5011645	5011270	5011226	5011240	5011254	5011266	5011728	
9.1	5011646	5011668	5011680	5011489	5011255	5011706	5011729	

(Glue dots, approx. 200, part no. 3181932).

LIST OF MECHANICAL PARTS

Front frame



Beovision LX 6000

9001	3131325	House f/IR		3451192	Panel, right, grey line
9002	3164570	Cap	9006	3451187	Panel, left
9003	3414146	Front frame		3451191	Panel, left, grey line
	3414215	Front frame, white line	9045	3131324	Cap
	3414649	Front frame, grey line	9046	2776032	Button, mains switch
9004	3451295	Contrast screen	9047	2776033	Button, P-step
	3950043	Rubber string			
9005	3451188	Panel, right			

Beovision LX 5000

9001	3131325	House f/IR		3451194	Panel, right, grey line
9002	3164570	Cap	9006	3451189	Panel, left
9003	3414136	Front frame		3451193	Panel, left, grey line
	3414135	Front frame, white line	9045	3131324	Cap
	3414549	Front frame, grey line	9046	2776032	Button, mains switch
9004	3451293	Contrast screen	9047	2776033	Button, P-step
	3950044	Rubber string			
9005	3451190	Panel, right			

07Module	8007609	PCB 7, Headphone	0705	2938282	Bushing
0701	2710742	Jack plug			

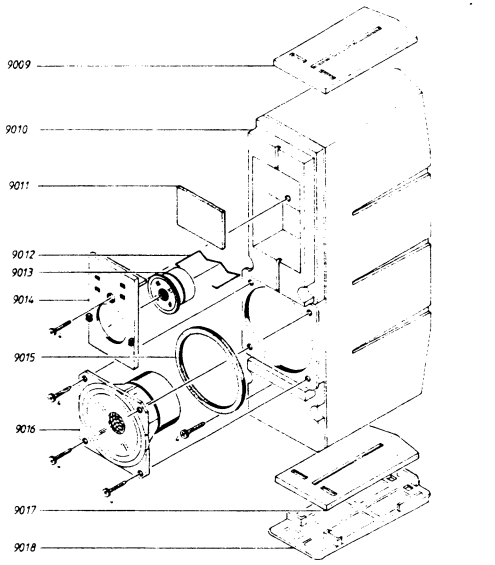
⇨

09Module	8007789	PCB 9, IR Transceiver	3302468	Shield, bottom
	3302467	Shield, top	3375070	Linse f/IR
			3152809	Holder f/diode

Survey of screws

1	2019018	Screw 4 x 16mm
2	2021013	Screw 5 x 20mm

Loudspeaker cabinet



Beovision LX 6000

9009	3152614	Pressure pad	9015	3340094	Gasket
9010	3430373	Loudspeaker cabinet, right	9016	8480214	Bass speaker
	3430374	Loudspeaker cabinet, left	9017	3152614	Pressure pad
9011	3907051	Pressure pad	9018	3035054	Plastic foot
9012	2819207	Spring		8007992	Crossover network, right
9013	8480230	Treble speaker		8007919	Crossover network, left
9014	3152859	Loudspeaker suspension			

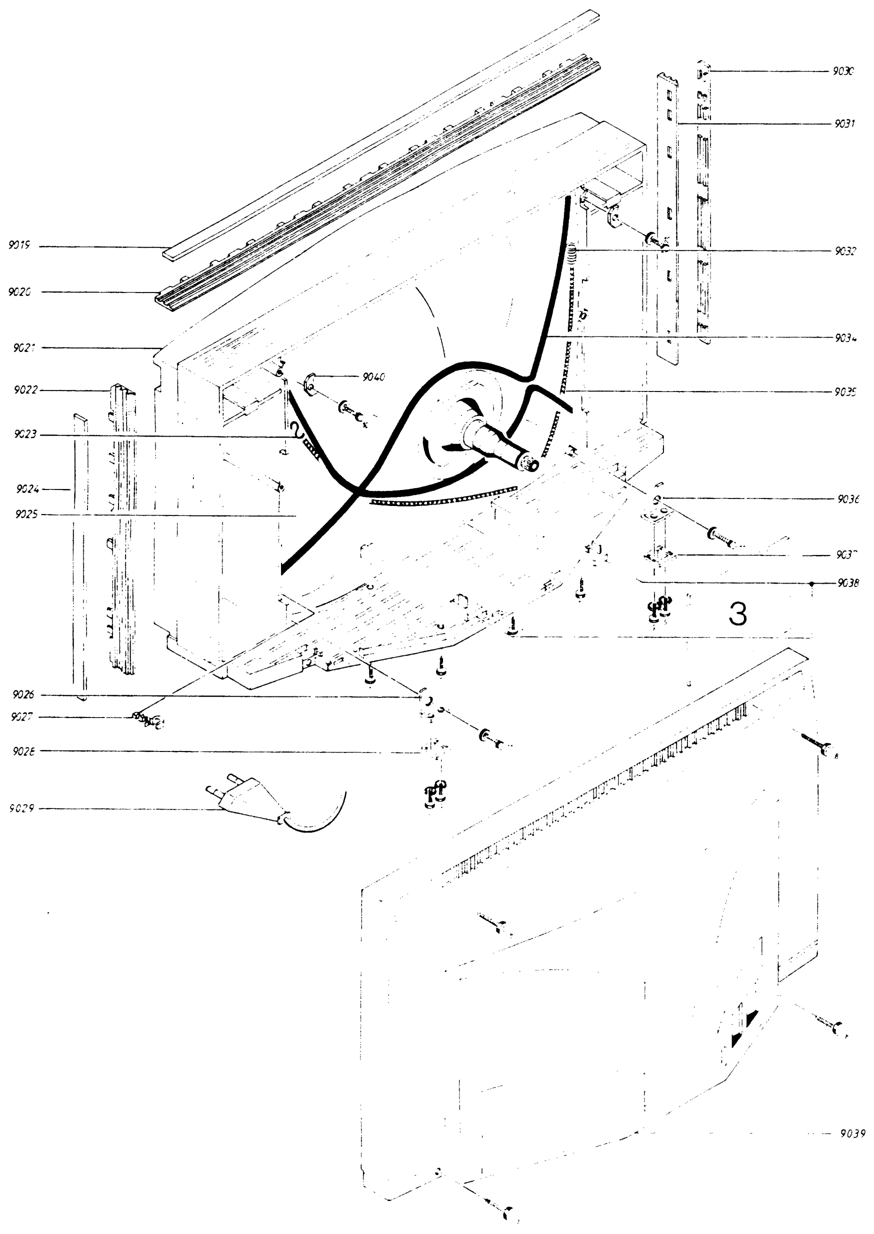
Beovision LX 5000

9009	3152615	Pressure pad	9014	8039096	Crossover network, right
9010	3430376	Loudspeaker cabinet, right		8039093	Crossover network, left
	3430377	Loudspeaker cabinet, left	9015	3340047	Gasket
9011	3907051	Pressure pad	9016	8480164	Bass speaker
9012	2819207	Spring	9017	3152615	Pressure pad
9013	8480204	Treble speaker	9018	3035054	Plastic foot

Survey of screws

4	2015133	Screw 3.5 x 16mm

Cabinet



Cabinet
Beovision LX 6000

9019	2569322	Profile, top, rosewood
	2569324	Profile, top
	2569326	Profile, top, white line
	2569328	Profile, top, grey line
9020	3152415	Holder, top
	3152750	Holder, top, white line
	3152768	Holder, top, grey line
9021	3414603	Cabinet, rosewood
	3414325	Cabinet, white
	3414329	Cabinet, grey
	3414326	Cabinet, black
	3414149	Cabinet, white line
	3414449	Cabinet, grey line
	2620076	Felt washer
	3946110	Moulding set
9022	3152539	Holder, right
	3152752	Holder, right, white line
	3152767	Holder, right, grey line
9023	2510119	Clamp
9024	2569232	Profile, side, rosewood
	2569220	Profile, side
	2569243	Profile, side, white line
	2569258	Profile, side, grey line
9025	8200074	Picture tube 28"
9026	3152446	Holder
9027	3152778	Holder
9028	2576200	Spacer
9029	6275993	Mains lead w/filter
9030	2569232	Profile, side, rosewood
	2569220	Profile, side
	2569243	Profile, side, white line
	2569258	Profile, side, grey line
9031	3152438	Holder, left
	3152751	Holder, left, white line
	3152766	Holder, left, grey line
9032	2810189	Spring
9034	8022222	Degaussing coil
9035	7510041	Ground current
9036	3152432	Holder
9037	2576200	Spacer
9038	3152803	Set of rails
9039	3414336	Rear cover
	3414845	Rear cover, white line
9040	2576170	Spacer

03Module 8008099 PCB 3, Video Output

Cabinet
Beovision LX 5000

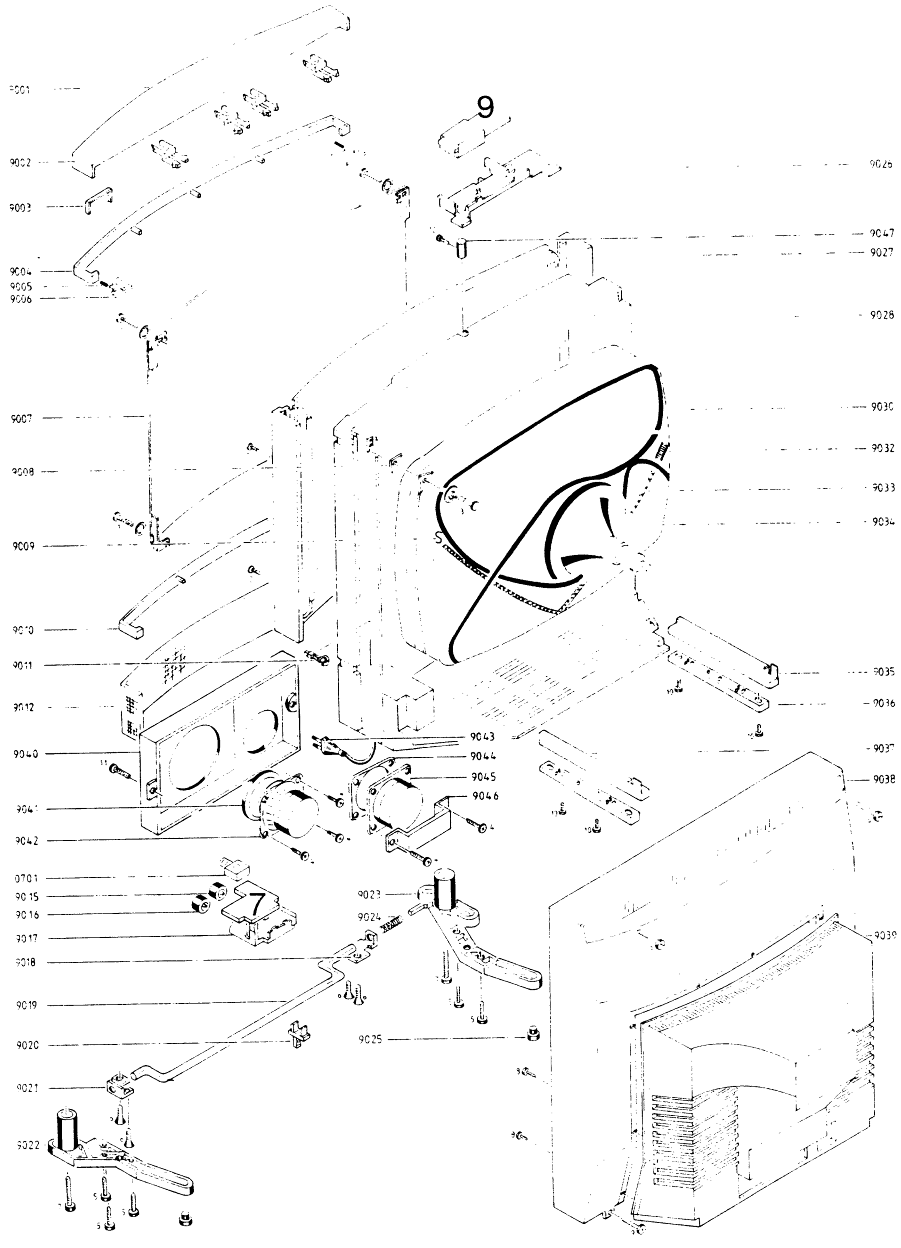
9019	2569323	Profile, top, rosewood
	2569325	Profile, top
	2569327	Profile, top, white line
	2569329	Profile, top, grey line
9020	3152451	Holder, top
	3152753	Holder, top, white line
	3152771	Holder, top, grey line
9021	3414303	Cabinet, rosewood
	3414425	Cabinet, white
	3414429	Cabinet, grey
	3414426	Cabinet, black
	3414139	Cabinet, white line
	3414349	Cabinet, grey line
	2620076	Felt washer
	3946109	Moulding set
9022	3152538	Holder, right
	3152755	Holder, right, white line
	3152770	Holder, right grey line
9023	2510119	Clamp
9024	2569233	Profile, side, rosewood
	2569221	Profile, side
	2569242	Profile, side, white line
	2569248	Profile, side, grey line
9025	8200075	Picture tube 25"
9026	3152446	Holder
9027	3152778	Holder
9028	2576200	Spacer
9029	6275993	Mains lead w/filter
9030	2569233	Profile, side, rosewood
	2569221	Profile, side
	2569242	Profile, side, white line
	2569248	Profile, side, grey line
9031	3152452	Holder, left
	3152754	Holder, left, white line
	3152769	Holder, left, grey line
9032	2810189	Spring
9034	8022249	Degaussing coil
9035	7510040	Ground current
9036	3152432	Holder
9037	2576200	Spacer
9038	3152803	Set of rails
9039	3414436	Rear cover
	3414945	Rear cover, white line
9040	2576170	Spacer

03Module 8008099 PCB 3, Video Output

Survey of screws

1	2019018	Screw 4 x 16mm
8	2021012	Screw 5 x 25mm
9	2044042	Screw 5 x 20mm w/washer
10	2044048	Screw 5 x 25mm w/washer
11	2044047	Screw 5 x 15mm w/washer

Beovision MX 6000



Beovision MX 6000

9001	3451008	Lid
9002	2391070	Hinge
9003	3322092	Window
9004	3450701	Cap
9006	3164687	Holder
9007	3451039	Contrast screen
9008	2640053	Spacer
9009	2510119	Clamp
9010	3451186	Cap
9011	3152778	Holder
9012	3320173	Loudspeaker panel
9013	8480164	Loudspeaker
9014	3340074	Gasket
9015	2776033	Press button-STEP
9016	2776032	Press button - ●
9017	3152797	Holder
9018	3031175	Fitting f/tilting foot, left
9019	3103238	Tilting foot
9020	3152566	Holder f/tilting foot
9021	3031129	Fitting f/tilting foot, right
9022	3031157	Fitting f/bottom, right
9023	3031234	Fitting f/bottom, left
9024	2819237	Spring
9025	3035032	Rubber foot
9026	3131329	Holder
9027	3320159	Front frame w/rubber string
	3950029	Rubber string
9028	3320162	Chassis w/foot
	3946083	Tightening, side
	3946084	Tightening, top/bottom
	3103287	Foot
9030	8022222	Degaussing coil
9032	2810189	Tension spring
9033	7510041	Ground current
9034	8200074	Picture tube
9035	3152677	Guide rail, left
9036	2576242	Spacer f/rail
9037	3152678	Guide rail, right
9038	3414244	Back cover, red
	3414245	Back cover, white
	3414246	Back cover, black
	3414248	Back cover, blue
	3414249	Back cover, grey
9039	3430472	Back cover, small
9040	3440121	Loudspeaker panel, right
	3440120	Loudspeaker panel, left
	3340099	Rubber string
9041	3340097	Gasket
9042	8480214	Loudspeaker, bass
9043	6275993	Mains lead w/filter
	6275989	Mains lead AUS
9044	3340098	Gasket
9045	8480230	Loudspeaker, treble
9046	3152817	Holder
9047	2576248	Spacer
	8007703	Crossover network
	3332041	Damping material, small
	3332042	Damping material, large

03Modul	8008099	PCB3, Video Output

07Modul	8007609	PCB 7, Headphone
0701	7210742	Socket headphone 3.5mm

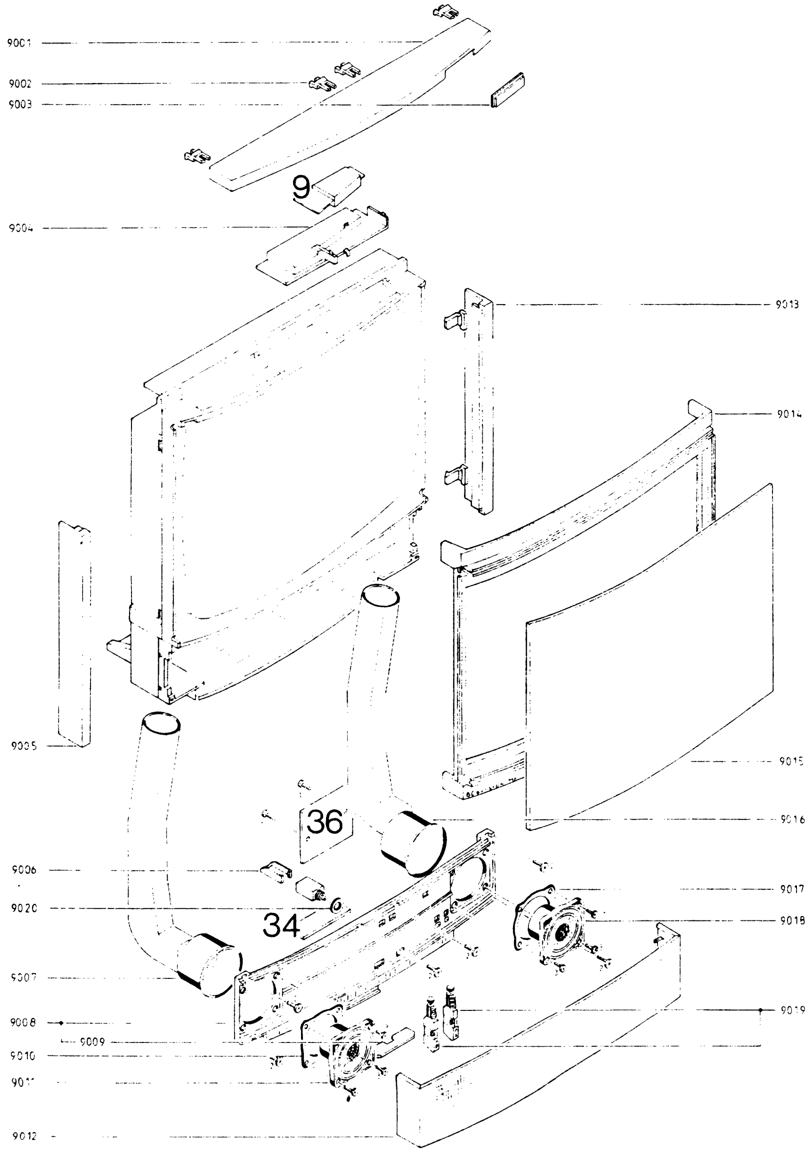
09Modul	8007789	PCB 9, IR Transceiver
	3302467	Shield, top
	3302468	Shield, bottom
	3375070	Linse f/IR
	3152809	Holder f/diode

Survey of screws

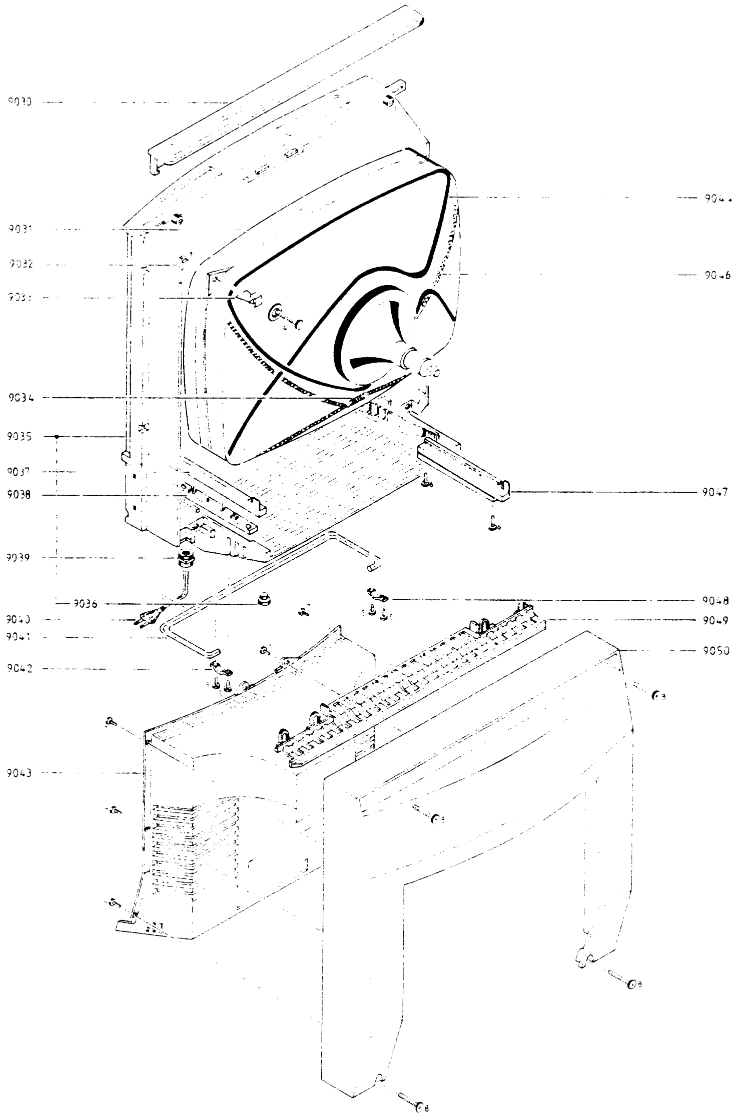
1	2015129	Screw 3.5 x 12mm w/washer
2	2013123	Screw 3 x 10mm
3	2044048	Screw 5 x 25mm w/washer
4	2015142	Screw 3.5 x 10mm
5	2019018	Screw 4 x 16mm
6	2019015	Screw 4 x 14mm
7	2021003	Screw 5 x 35mm
8	2019017	Screw 4 x 10mm
9	2021010	Screw 5 x 25/11mm
10	2019018	Screw 4 x 16mm
11	2019021	Screw 4 x 12mm
12	2013182	Screw 3 x 20mm

4-7
LIST OF MECHANICAL PARTS

Front frame
Beovision MX 4000


9001
9002
9003
9
9004
9013
9014
9005
9015
36
9016
9006
9017
9020
34
9018
9007
9019
9008
9009
9010
9011
9012

Cabinet
Beovision MX 4000



Front frame
Beovision MX 4000

9001	3164644	Lid
9002	2391070	Hinge
9003	3322092	Window
9004	3131329	Holder
9005	3470193	Side plate
	3950028	Rubber string
9006	2510171	Clamp
9007	3132113	Loudspeaker damping tube, left
9008	3440101	Loudspeaker baffle w/foot
9009	3103286	Foot
9010	3340074	Gasket
9011	8480164	Loudspeaker
9012	3320174	Loudspeaker panel
9013	3470193	Side plate
	3950028	Rubber string
9014	3320202	Front frame
	3950020	Rubber string
9015	3451100	Contrast screen
9016	3132114	Loudspeaker damping tube, right
9017	3340074	Gasket
9018	8480164	Loudspeaker
9019	2776261	Press buttons, complete
9020	2938282	Bushing
09Modul	8007789	PCB 9, IR Transceiver
	3302467	Shield, top
	3302468	Shield, bottom
	3375070	Linse f/IR
	3152809	Holder f/diode
34Modul	8007617	PCB 34, Headphone
36Modul	8007617	PCB 36, Deflection Transformer

Cabinet
Beovision MX 4000

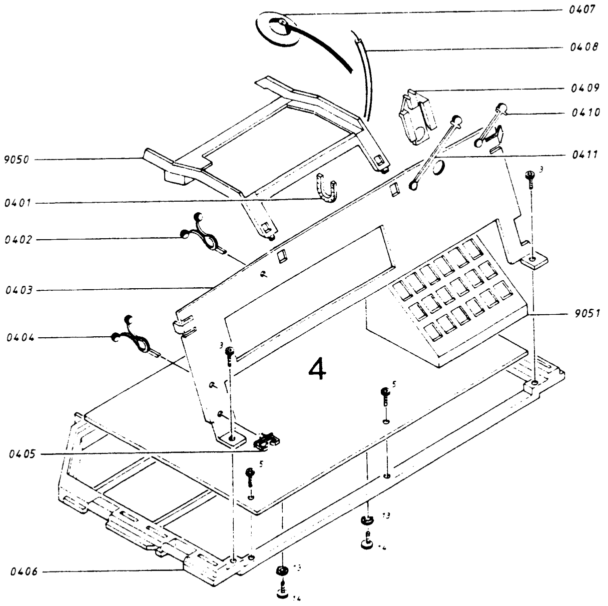
9030	2530537	Carrying handle
9031	8200063	Picture tube
9032	2640053	Spacer
9033	2514066	Clamp
9034	2810189	Tension spring
9035	3320133	Chassis
	3946094	Tightening rail
9036	3035053	Rubber foot
9037	3152678	Guide rail, right
9038	2576242	Spacer f/guide rail
9039	2641119	Bushing f/mains cable
9040	6275994	Mains lead w/filter
	6275992	Mains lead AUS
9041	3103261	Tilting foot
9042	2641114	Fitting f/tilting foot
9043	3430471	Back cover, small
9044	8022325	Degaussing coil
9046	7510035	Ground current
9047	3152677	Guide rail, left
9048	2641114	Fitting f/tilting foot
9049	3444182	Grill
9050	3414164	Back cover, red
	3414165	Back cover, white
	3414166	Back cover, black
	3414168	Back cover, blue
	3414169	Back cover, grey
03Modul	8008099	PCB3, Video Output

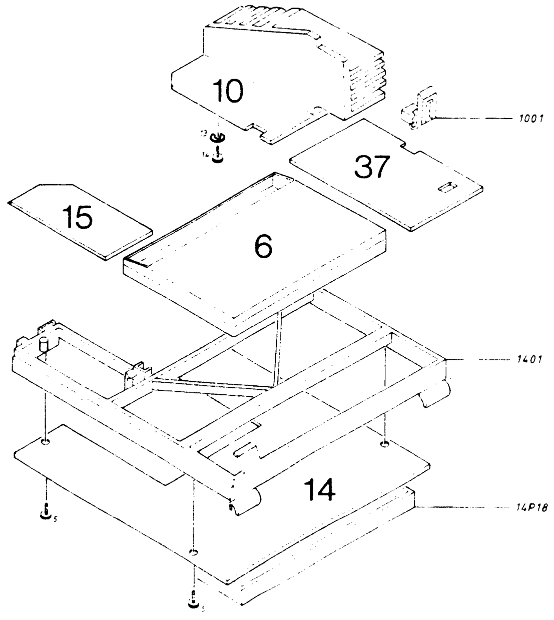
Survey of screws

2	2019009	Screw 4 x 12mm
3	2013123	Screw 3 x 10mm
4	2044048	Screw 5 x 25mm w/washer
5	2019009	Screw 4 x 12mm
6	2019018	Screw 4 x 16mm
7	2019010	Screw 4 x 8mm
8	2021009	Screw 5 x 25mm

4-9
LIST OF MECHANICAL PARTS

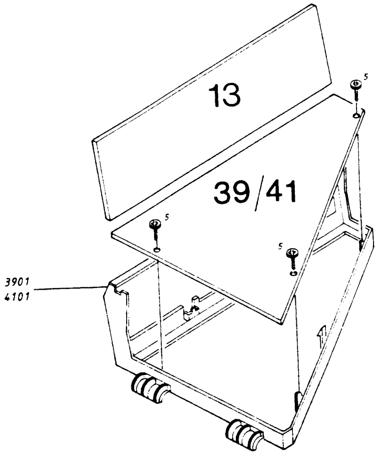
Electrical chassis

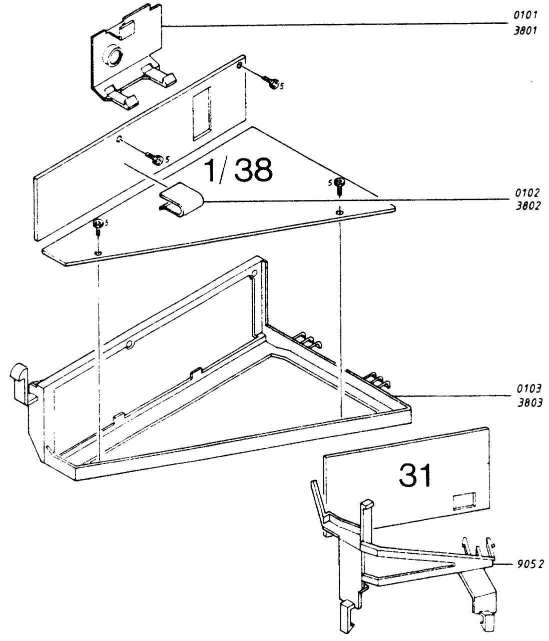

0407
0408
0409
0410
0411
9050
0401
0402
0403
0404
4
9051
0405
0406
3
5
13
14


10
1001
37
15
6
1401
14
14P18
13
14
5

4-9
LIST OF MECHANICAL PARTS

Electrical chassis


13
39/41
3901
4101
5


0101
3801
1/38
0102
3802
0103
3803
31
9052
5

Electrical chassis

9050	3152795	Holder
9051	3300132	Shield
9052	3152676	Holder f/nicam

01Module	8007449	PCB 1, Tuner & IF B/G/L
	2515063	Wire holder
0101	3451045	Front plate
0102	3358267	Heat sink
0103	3152673	Chassis

04Module	8007519	PCB 4, Power Supply & Deflection
	2816154	Spring clip f/TR33
	2816195	Spring clip f/IC4-TR1-D34-D36
0401	3950046	Wire holder
0402	2515063	Wire holder
0403	3152793	Shield
0404	2515063	Wire holder
0405	3152871	Wire holder
0406	3152792	Chassis
0407	6270474	EHT cable
0408	6270473	Focus cable
0409	3152683	Wire holder
0410	3152633	Service strap, short
0411	3152634	Service strap, long

06Module	8008133	PCB 6, Microcomputer 64K
	8008134	PCB 6, Microcomputer 64K, AUS

10Module	8007569	PCB 10, Sound Output
	2622448	Mica washer
	2816195	Spring clip
1001	3152294	Wire holder

13Module	8007579	PCB 13, Sync Processing

14Module	8007479	PCB 14, Double AV Switch
1401	3152794	Chassis
14P18	3168760	DIN/Scart panel

15Module	8007739	PCB 15, St By Stabilization

31Module	8007809	PCB 31, Nicam B/G/I

37Module	8007509	PCB 37, Teletext

38Module	8007779	PCB 38, Tuner & IF Pal I
	2515063	Wire holder
3801	3451045	Front plate
3802	3358267	Heat sink
3803	3152673	Chassis

39Module	8008023	PCB 39, Pal Decoder
	2515063	Wire holder
3901	3152672	Chassis

41Module	8008062	PCB 41, Pal/Secam/NTSC Decoder
	2515063	Wire holder
4101	3152672	Chassis

Survey of screws

3	2013123	Screw 3 x 10mm
5	2013144	Screw 3 x 8mm
13	2625002	Washer
14	2038097	Screw 3 x 6mm

Survey of wire bundles

6276465	Main wire bundle
6276464	Main wire bundle w/shielded wires
0933522	Wire bundle f/LX 6000
0933523	Wire bundle f/LX 5000
0933550	Wire bundle f/MX 6000
	Consist of:
	3P89 - 4P14
	3P90 - 39/41P30
	4P22 - Deflection
	7P86 - 15P83
	9P85 - 15P82
0933551	Wire bundle f/MX 4000
	Consist of:
	3P89 - 4P14
	3P90 - 39/41P30
	4P22 - 36P92
	9P85 - 15P82
	15P83 - 34P86
	34P87 - 36P88
	36P93 - Deflection

Survey of wires

6276476	6P71 - 14P60
6276485	6P72 - 14P61
6276483	6P73 - 14P62
6276481	6P74 - 15P78
6276482	6P75 - 15P77
6276127	31P801 - 38P2
6276020	31P802 - 38P7
6276037	31P803 - 38P3
6276479	31P804 - 38P1
6276484	39/41P29 - 13P37
6276568	39/41P35 - 13P38
	Beovision LX 5000/6000:
6276502	15P49 - Loudspeaker, right
6276501	15P50 - Loudspeaker, left
	Beovision MX 6000:
6276515	15P49 - Loudspeaker, right
6276516	15P50 - Loudspeaker, left
	Beovision MX 4000:
6276271	15P49 - Loudspeaker, right
6276514	15P50 - Loudspeaker, left

Owner's Manuals

3501281	Danish
3501282	Swedish
3501283	Finnish
3501284	English
3501285	German
3501286	Dutch
3501287	French
3501288	Italian
3501289	Spanish

Packing

	Beovision LX 5000:
3397593	Foam packing
3917105	Foam foil
3391936	Carton f/Beolink 1000
3392083	Outer carton
	Beovision LX 6000:
3397568	Foam packing
3917105	Foam foil
3391936	Carton f/Beolink 1000
3392082	Outer carton
	Beovision MX 6000:
3397637	Foam packing
3917105	Foam foil
3391936	Carton f/Beolink 1000
3392015	Outer carton
	Beovision MX 4000:
3397620	Foam packing (4 pcs)
3397557	Foam packing (1 pcs)
3917104	Foam foil
3391936	Carton f/Beolink 1000
3391983	Outer carton

Accessories

See technical specifications, page 1-2.

Beolink 1000

For remote control Beolink 1000, see the service manual "MASTER CONTROL LINK", no. 3538711 page 1-15.

TB 4108 – LX 5000/6000

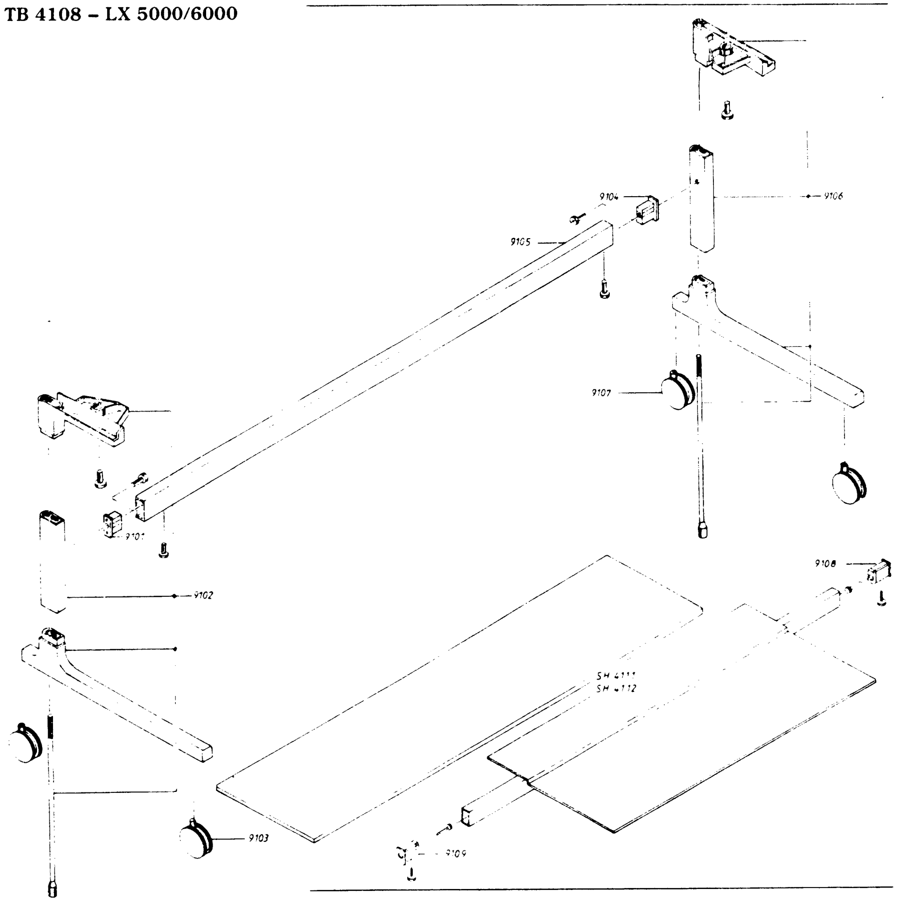


Table 1410865, white
1410866, black

9101	3152531	Holder		1410465	Traverse f/LX 5000, white
9102	3103307	Post, left, white			
	3103301	Post, left, black		1410466	Traverse f/LX 5000, black
9103	3032018	Wheel, white			
	3032019	Wheel, black	9106	3103308	Post, right, white
9104	3152531	Holder		3103300	Post, right, black
9105	1410365	Traverse f/LX 6000, white	9107	3032018	Wheel, white
				3032019	Wheel, black
	1410366	Traverse f/LX 6000, black			

Parts not shown

3390273	Bag with parts	3391963	Outer carton
3397564	Foam packing		

SH 4111
SH 4112

	1411113	Shelf - LX 6000, metal grey
	1411213	Shelf - LX 5000, metal grey
9108	3152748	Holder, right
9109	3152749	Holder, left

Parts not shown

3390409	Bag with parts	3397713	Foam packing 28"
3504411	Assembling guide	3392138	Outer carton, 28"
3397712	Foam packing 25"/28"	3392139	Outer carton, 25"

TB 4110 – MX 4000

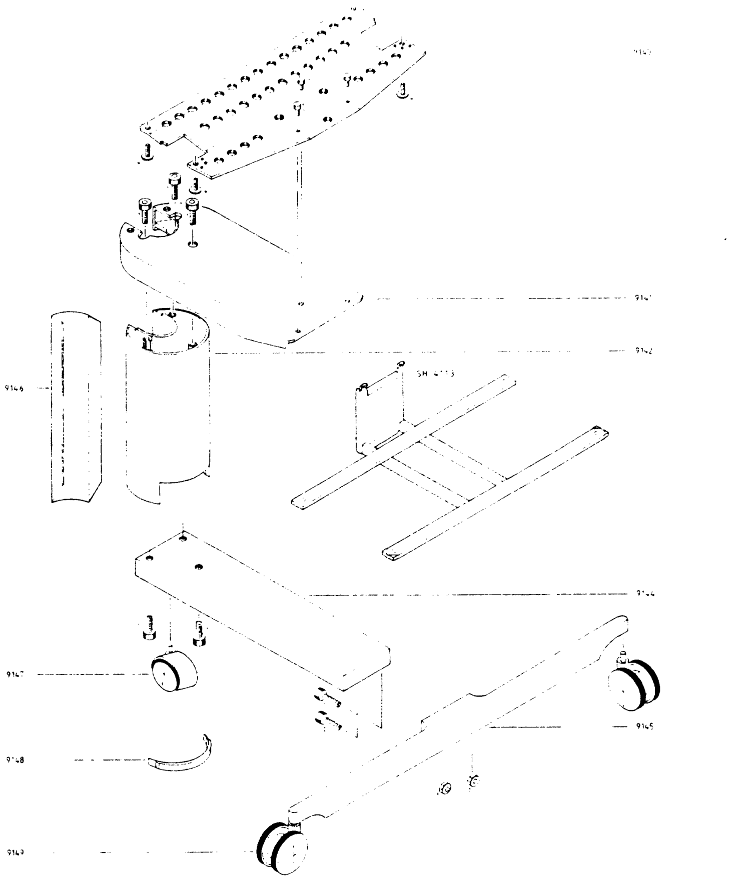


Table 1411066, black
1411069, silver grey

9140	3124122	Mounting plate	9146	3164857	Cover f/intermediate
9141	3458756	Frame, top			
9142	2569241	Frame, intermediate piece	9147	3032022	Wheel
			9148	3456187	Cover f/bottom
9144	3454699	Frame, bottom	9149	3032019	Wheel
9145	3451079	Profile			

Survey of screws

1	2046017	Screw 6 x 16mm	4	2044033	Screw 5 x 12mm
2	2044060	Screw 5 x 25mm	5	2044057	Screw 5 x 8mm
3	2380141	Nut			

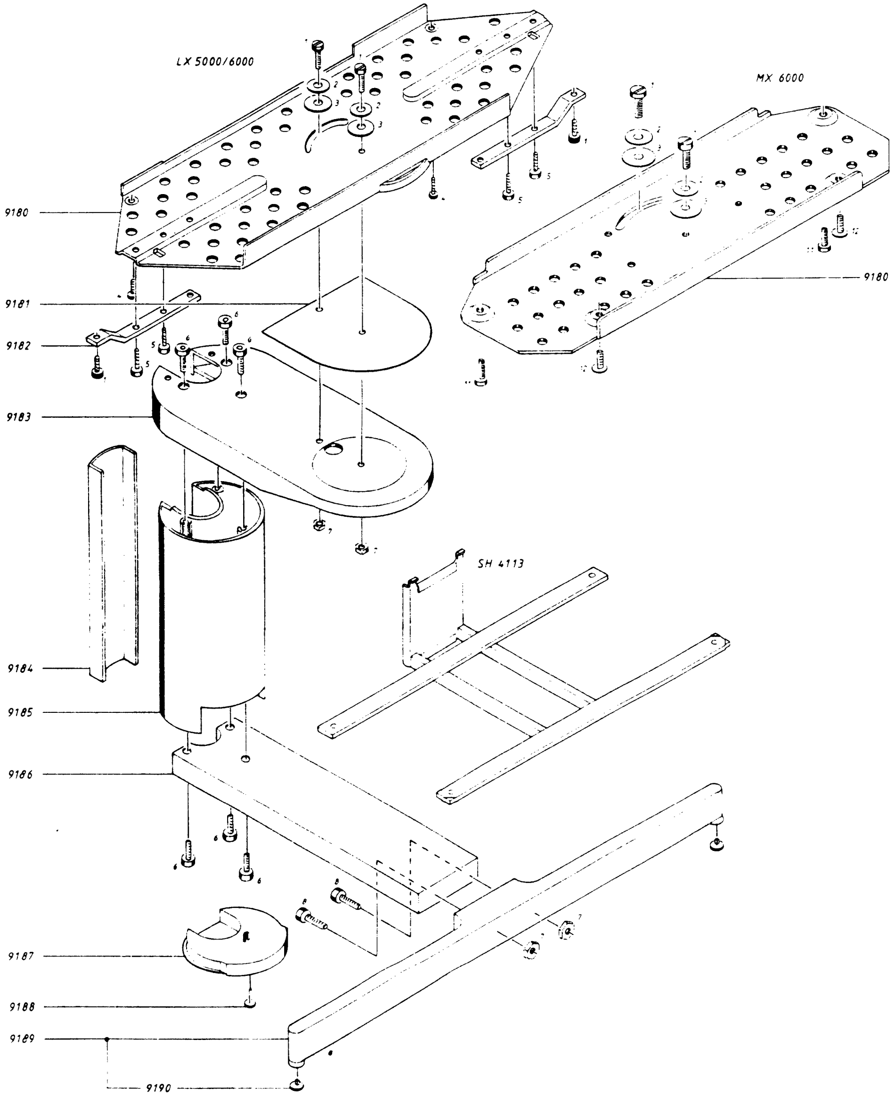
Parts not shown

3390418	Bag w/parts
3504415	Assembling guide
3397748	Foam packing
3392169	Outer carton

SH 4113

1411366	Shelf for VX, black
3397723	Foam packing
3392149	Outer carton

ST 4117 - LX 5000/6000
ST 4109 - MX 6000



Stand: 1411766, black
1411769, silver grey

Stand: 1410966, black
1410969, silver grey

9180	3124124	Mounting plate f/LX 5000/6000
	3124117	Mounting plate f/ MX 6000
9181	3915044	Gasket
9182	3456185	Spacer
9183	3458737	Frame, top
9184	3164831	Cover
9185	2569231	Frame intermediate, piece
9186	3454619	Frame, bottom, black
	3454714	Frame, bottom, silver grey
9187	3103298	Cover f/bottom
9188	2992113	Lock pin
9189	3451052	Profile, black
	3451164	Profile, silver grey
9190	3035063	Rubber foot

Survey of screws, nuts and washers

1	2046024	Screw 6 x 16mm
2	2622413	Washer
3	2622414	Washer
4	2021006	Screw 5 x 20mm
5	2046023	Screw 6 x 8mm
6	2046017	Screw 6 x 16mm
7	2380130	Nut M6
8	2046031	Screw 6 x 25mm
11	2044055	Screw 5 x 16mm
12	2021011	Screw 5 x 15mm

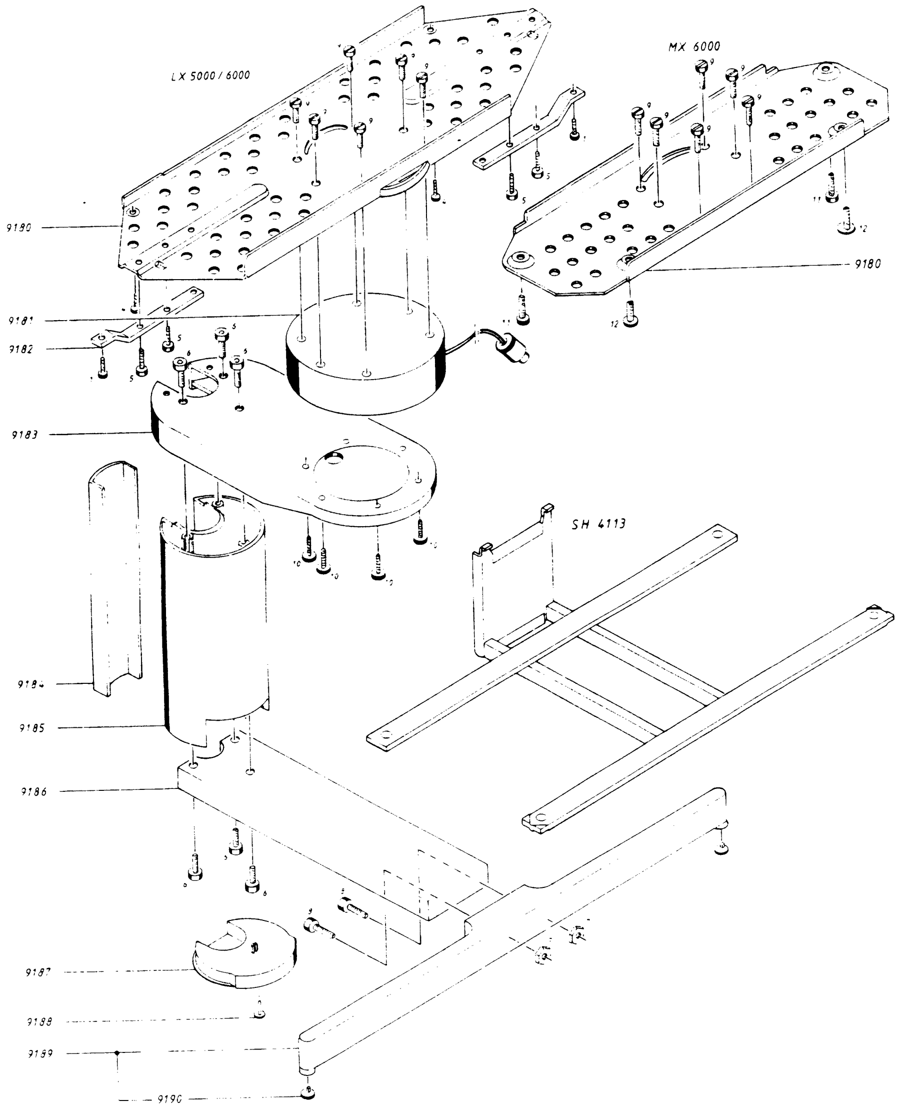
Parts not shown

3390449	Bag w/parts f/LX 5000/6000
3390415	Bag w/parts f/MX 6000
3504444	Assembling guide f/LX 5000/6000
3504414	Assembling guide f/MX 6000
3397726	Foam packing
3392152	Outer carton

SH 4113

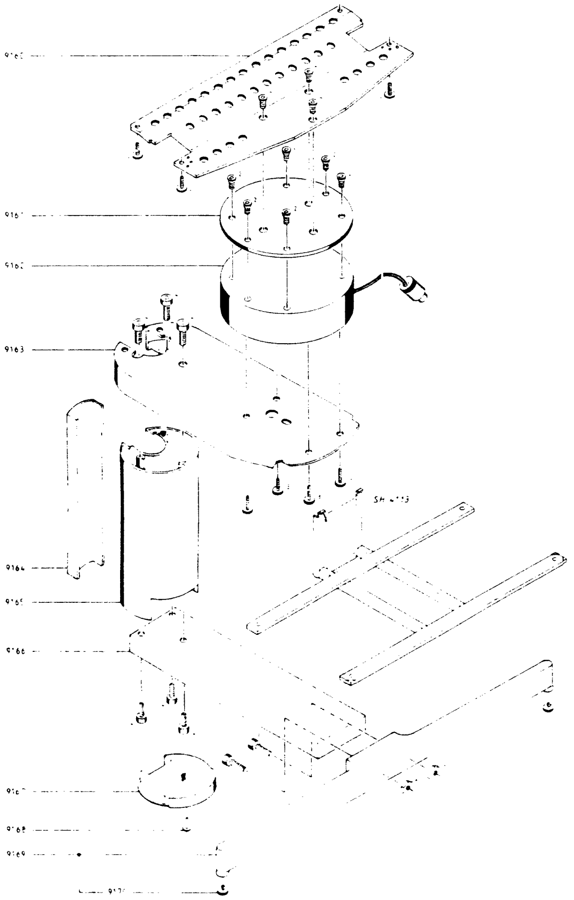
1411366	Shelf for VX, black
3397723	Foam packing
3392149	Outer carton

MS 4106 – LX 5000/6000
MS 4107 – MX 6000



Stand: 1410666, black **1410669, silver grey**	9180	3124124	Mounting plate f/LX 5000/6000
		3124117	Mounting plate f/MX 6000
	9181	8053314	Revolving unit
	9182	3456185	Spacer
Stand: 1410766, black **1410769, silver grey**	9183	3458737	Frame, top
	9184	3164831	Cover
	9185	2569231	Frame intermediate, piece
	9186	3454619	Frame, bottom, black
		3454714	Frame, bottom, silver grey
	9187	3103298	Cover f/bottom
	9188	2992113	Lock pin
	9189	3451052	Profile, black
		3451164	Profile, silver grey
	9190	3035063	Rubber foot
Survey of screws and nuts	1	2046024	Screw 6 x 16mm
	4	2021006	Screw 5 x 20mm
	5	2046023	Screw 6 x 8mm
	6	2046017	Screw 6 x 16mm
	7	2380130	Nut M6
	8	2046031	Screw 6 x 25mm
	9	2044035	Screw 5 x 10mm
	10	2044058	Screw 5 x 10mm
	11	2044055	Screw 5 x 16mm
	12	2021011	Screw 5 x 15mm
Parts not shown		3390407	Bag w/parts f/LX 5000/6000
		3390412	Bag w/parts f/MX 6000
		3504412	Assembling guide f/LX 5000/6000
		3504418	Assembling guide f/MX 6000
		3397726	Foam packing
		3392152	Outer carton
SH 4113		1411366	Shelf for VX, black
		3397723	Foam packing
		3392149	Outer carton

MS 4116 – MX 4000



Motorized Stand:
1411666, black
1411669, silver grey

9160	3124122	Mounting plate	9166	3454735	Frame, bottom
9161	2570045	Gasket	9167	3103315	Cover f/bottom
9162	8053314	Revolving unit	9168	2992113	Lock pin
9163	3458829	Frame, top	9169	3451036	Profile
9164	3164831	Cover f/intermediate	9170	3035057	Rubber foot
9165	2569065	Frame, intermediate piece			

Survey of screws

1	2044033	Screw 5 x 12mm	5	2044060	Screw 5 x 25mm
2	2044032	Screw 5 x 10mm	6	2380141	Nut M5
3	2044058	Screw 5 x 10mm	7	2044057	Screw 5 x 8mm
4	2046017	Screw 6 x 16mm			

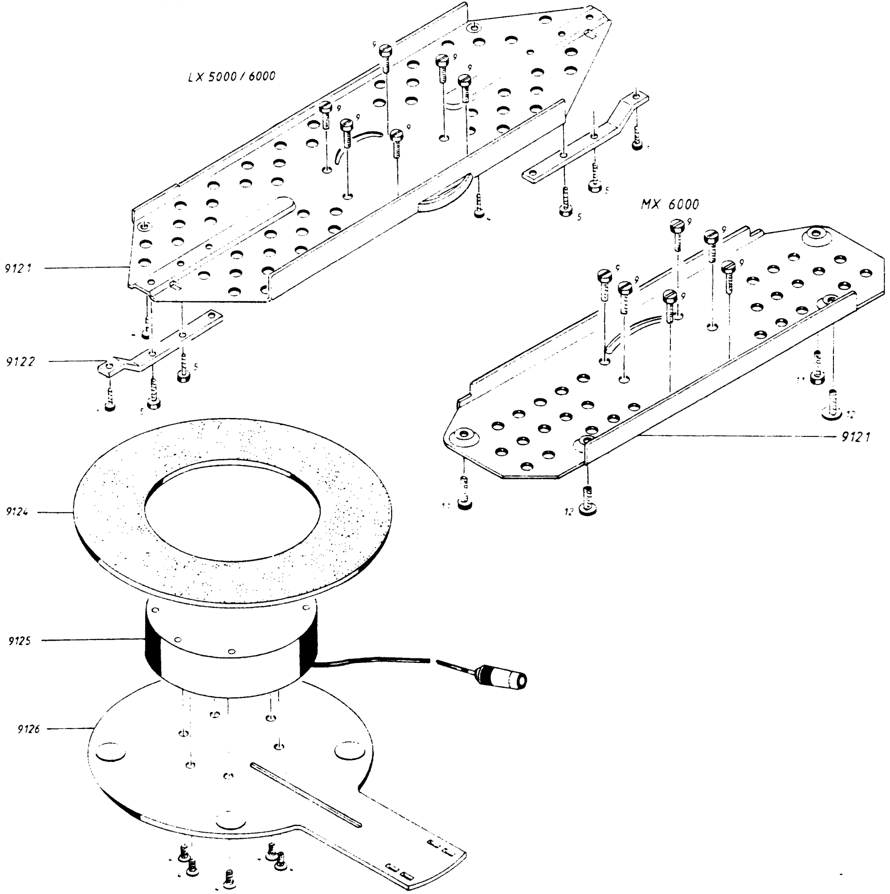
Parts not shown

3390444	Bag w/parts	3397748	Foam packing
3504445	Assembling guide	3392169	Outer carton

SH 4113

1411366	Shelf for VX, black	3397723	Foam packing
		3392149	Outer carton

MB 4101 – LX 5000/6000
MB 4102 – MX 6000



Motorized Base:
1410111, aluminium
1410211, aluminium

9121	3124124	Mounting plate f/LX 5000/6000
	3124117	Mounting plate f/MX 6000
9122	3456185	Spacer
9124	3458735	Topplate
9125	8053314	Revolving unit
9126	2752026	Bottom plate
	3103285	Plastic foot

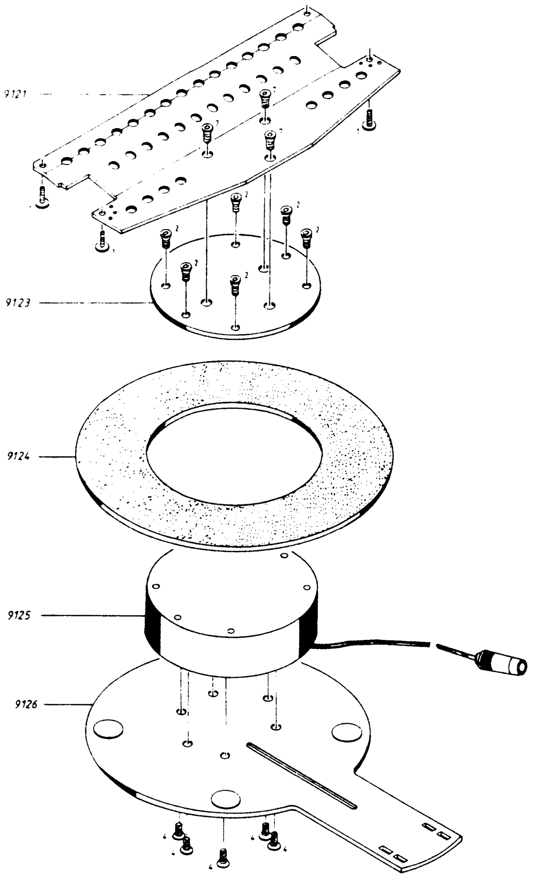
Survey of screws

1	2044035	Screw 5 x 10mm	9	2044035	Screw 5 x 10mm
4	2044032	Screw 5 x 10mm	11	2044055	Screw 5 x 16mm
5	2044055	Screw 5 x 16mm	12	2021011	Screw 5 x 15mm

Parts not shown

3390404	Bag w/parts f/LX 5000/6000
3390405	Bag w/parts f/MX 6000
3504413	Assembling guide f/LX 5000/6000
3504419	Assembling guide f/MX 6000
3397724	Foam packing f/LX 5000/6000
3397725	Foam packing f/MX 6000
3392150	Outer carton f/LX 5000/6000

MB 4105 - MX 4000



Motorized Base:
1410511, aluminium

9121	3124122	Mounting plate
9123	2570045	Gasket
9124	3458735	Topplate
9125	8053314	Revolving unit
9126	2752026	Bottom plate
	3103285	Plastic foot

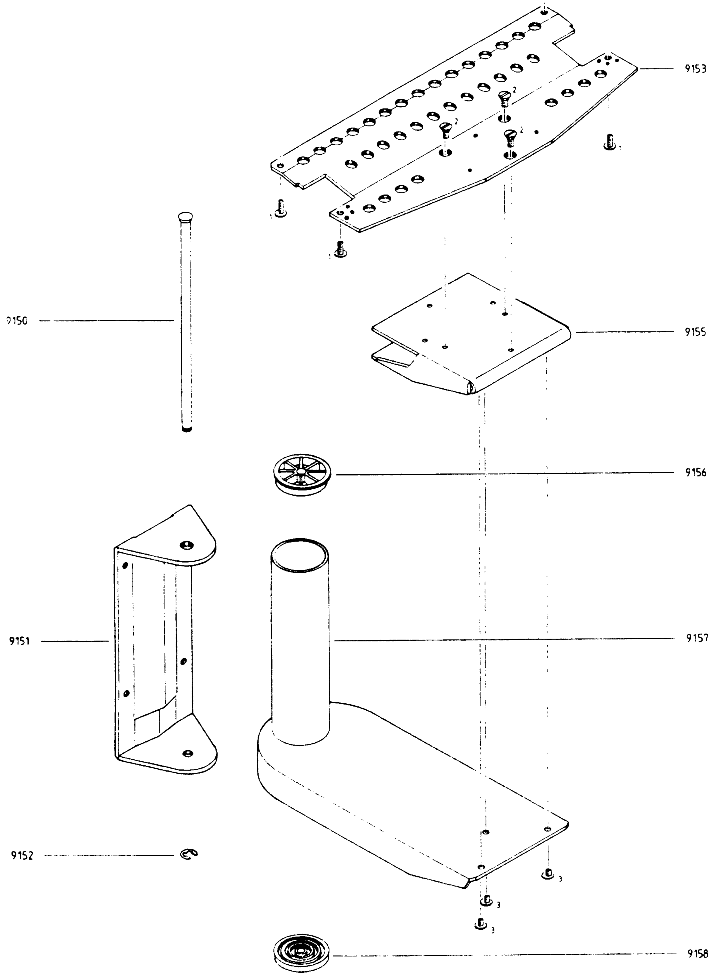
Survey of screws

1	2044033	Screw 5 x 12mm
2	2044032	Screw 5 x 10mm
4	2044058	Screw 5 x 10mm
7	2044057	Screw 5 x 8mm

Parts not shown

3390406	Bag w/parts
3504420	Assembling guide
3397725	Foam packing
3392151	Outer carton

WB 4114 – MX 4000



Wall Bracket: 1411466, black

9150	2831073	Shaft	9156	2905129	Slide bearing, top
9151	3031315	Fittings	9157	3151283	Holder
9152	2390108	Snap ring	9158	2905130	Slide bearing, bottom
9153	3124122	Mounting plate			
9155	3451096	Front plate			

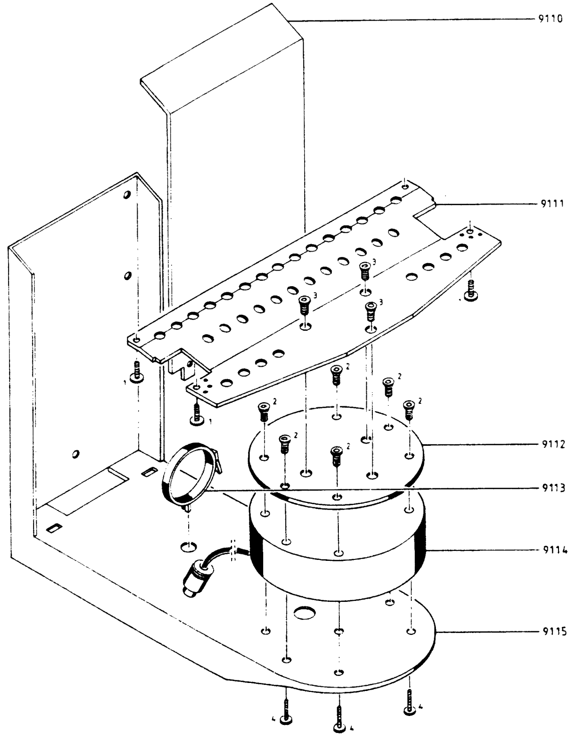
Survey of screws

1	2044033	Screw 5 x 12mm
2	2044057	Screw 5 x 8mm
3	2044032	Screw 5 x 10mm

Parts not shown

3390416	Bag w/parts
3504430	Assembling guide
3397749	Foam packing
3392173	Outer carton

MW 4115 – MX 4000



Motorized Wall Bracket: 1411566, black

9110	3162370	Cover
9111	3124122	Mounting plate
9112	2570045	Gasket
9113	3152746	Wire holder
9114	8053314	Revolving unit
9115	3458844	Holder

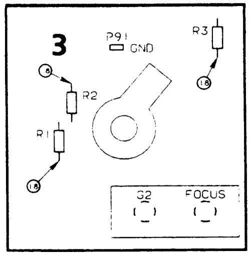
Survey of screws

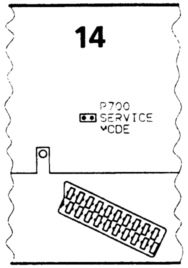
1	2044033	Screw 5 x 12mm
2	2044032	Screw 5 x 10mm
3	2044057	Screw 5 x 8 mm
4	2044058	Screw 5 x 10 mm

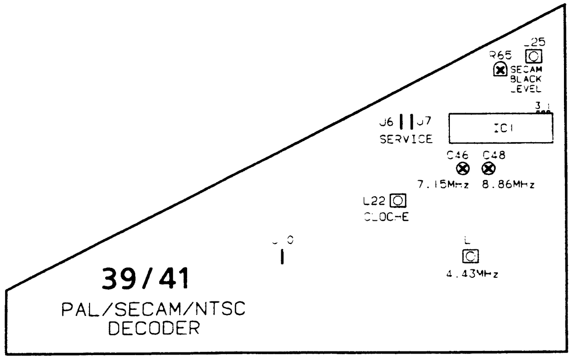
Parts not shown

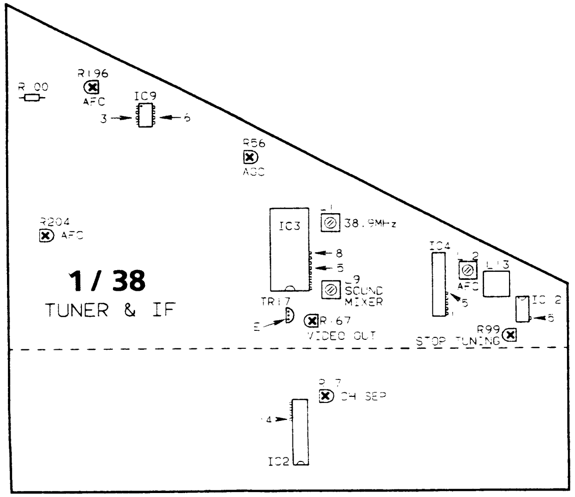
3390460	Bag w/parts
3504493	Assembling guide
3397880	Foam packing

ADJUSTMENTS


3
P91
GND
R3
R2
R1
G2
FOCUS


14
P700
SERVICE
MODE


L25
R65
SECAM
BLACK
LEVEL
J6
J7
SERVICE
IC1
C46
C48
7.15MHz
8.86MHz
L22
CLOCK
4.43MHz
39/41
PAL/SECAM/NTSC
DECODER


R100
R196
AFC
IC9
3
6
R56
AGC
R204
AFC
IC3
38.9MHz
8
5
9
SOUND
MIXER
TR17
R167
VIDEO OUT
IC4
AFC
5
R99
STOP TUNING
IC2
4
CH SEP
1/38
TUNER & IF

SERVICE ADJUSTMENTS WITH BEOLINK 1000

Service mode

Bring the TV set into SERVICE MODE:
- Remove the rear panel.
- Press [TV].
- Short-circuit the SERVICE MODE plug, P700, on PCB14 briefly.

SERVICE MODE gives access to making the following service adjustments:
(For other options available in service mode, please see repair tips).

Picture adjustments:

Display		Adjustment range
Rdr	Red drive	0-63
Gdr	Green drive	0-63
Rcu	Red cut-off balance	0-63
Gcu	Green cut-off balance	0-63
BRI	BRIlliance preset	0-7
COL	COLour preset	0-7

Geometrical adjustments:

Display		Adjustment range
Hfq	Horizontal frequency	0-63
Hph	Horizontal phase	0-63
Ham	Horizontal amplitude	0-63
Vam	Vertical amplitude	0-63
Vsc	Vertical S-correction	0-63
Vsh	Vertical shift (centring)	0-63
Vli	Vertical linearity	0-63
EWc	EW corner	0-63
EWp	EW parabola	0-63
EWt	EW tilt	0-63

Reset

Set the brilliance, colour saturation and contrast to nominal values:

- BRILLIANCE 32	[PICTURE] [^] [v]
- COLOUR 32	[PICTURE] [^] [v]
- CONTRAST 44	[PICTURE] [^] [v]

Store the values in the TV set, [PICTURE] [STORE] [STORE], such that they may be recalled by pressing [RESET] or [SHIFT] [MUTE] Beolink 1000 MK III see page 5-12.

OPERATION IN SERVICE MODE

[«] [»]	Step in menu
[<] [>]	or
[▼] [▲]	Changing of value
[STOP]	Out of service mode

When you go out of SERVICE MODE, the selected values are stored.
User adjustment of sound and picture is possible with Beolink 1000 in SERVICE MODE.

A standard colour test pattern is used for the following adjustments.

Preset

Preset adjustment (reference level) of brilliance and colour saturation.
- Set the brilliance and colour saturation to nominal values, [RESET] or [SHIFT] [MUTE] Beolink 1000 MK III.
- Bring the TV set into SERVICE MODE.
- Adjust the brilliance (BRI) until the picture has the proper brilliance (typically 5).
- Adjust the colour saturation (COL) to the proper colour saturation (typically 4).

Cut-off balance

- Set the brilliance to the nominal value, RESET or SHIFT MUTE Beolink 1000 MK III.
- Set the colour saturation to '0'.
- Bring the TV set into SERVICE MODE.
- Adjust the red and green cut-off balance (Rcu) and (Gcu) until the dark fields in the test pattern are colourless.

Drive

- Set the brilliance to the nominal value, RESET or SHIFT MUTE Beolink 1000 MK III.
- Set the colour saturation to '0'.
- Bring the TV set into SERVICE MODE.
- Adjust the red and green drive (Rdr) and (Gdr) to the proper white level.

HORIZONTAL DEFLECTION
Horizontal frequency

- Short-circuit pin 5 of 13IC1 to ground.
- Select Hfq in SERVICE MODE.
- Adjust the horizontal frequency to the slowest possible picture roll.
- Remove the short circuit.

East/West parabola

- Select EWp in SERVICE MODE.
- Adjust to correct geometry at the sides.

East/West tilt

- Select EWt in SERVICE MODE.
- Adjust to correct geometry (vertical centring is affected).

East/West corner

- Select EWc in SERVICE MODE.
- Adjust to correct geometry in the corners.

Horizontal amplitude

- Select Ham in SERVICE MODE.
- Adjust to correct amplitude.

Horizontal centring/'phase'

- Set the BRILLIANCE to the maximum value.
- Select Ham in SERVICE MODE and adjust to minimum width.
- Select Hph and centre the picture such that it is within the scanning period.
- Select Ham and adjust to correct width.
- Centre the picture optimally by means of 3S1.
- Select Hph and readjust.
- Press RESET or SHIFT MUTE (Beolink 1000 MK III) to adjust the BRILLIANCE to its nominal value.

VERTICAL DEFLECTION
Vertical amplitude

- Select Vam in SERVICE MODE.
- Adjust to correct amplitude.

Vertical linearity

- Select Vli in SERVICE MODE.
- Adjust to correct linearity.

Vertical S-correction

- Select Vsc in SERVICE MODE.
- Adjust to correct geometry (East/West corner is affected).

Vertical centring

- Select Vsh in SERVICE MODE.
- Adjust to correct centring (East/West tilt is affected).

Repeat the adjustment procedure if required.

ADJUSTMENT GUIDE

A standard colour test pattern must be connected when making the following adjustments unless otherwise specified.
Service adjustments with the remote control terminal must have been made in advance.

Module 39/41 PAL/SECAM/
NTSC decoder
Focus

- Set the brilliance and colour saturation to their nominal values, RESET or SHIFT MUTE Beolink 1000 MK III.
- Set the contrast to the maximum value.
- Adjust to optimum focusing as viewed approx. 10 cm from the edge of the screen by means of the focus potentiometer on module 3.

4.43 MHz chroma trap

- Connect a PAL test pattern (colour bar).
- Connect an oscilloscope to 39/41J10 (coordinate 2C).
- Adjust 39/41L1 (coordinate 1C) to obtain the minimum 4.43 MHz residue in the signal.

PLL ref. osc

- Connect a PAL test pattern (colour bar).
- Short-circuit 39/41J6 and 39/41J7 (coordinate 2B). .
- Adjust 39/41C48 (coordinate 1B) to obtain the minimum colour roll in the colour bar.

If a PAL/NTSC B/G/M IF is installed in the TV set, 41C46 has to be adjusted, too.
- Adjust 41C46 (coordinate 1B) in the same way as 41C48. Only an NTSC M test pattern has to be connected to the TV set.

Cloche filter

- Connect a SECAM test pattern (colour bar).
- Adjust 41L22 (coordinate 2C) until the optimum colour graduations in the colour bar are achieved.

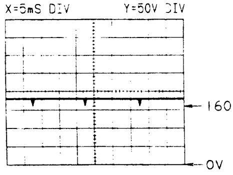
SECAM black level

- Connect a SECAM test pattern with black content.
- Connect an oscilloscope to pin 1 of 41IC1.
- Adjust 41R65 (coordinate 1A) until the DC level of the signal has the same DC level as blanking (black level).
- Connect an oscilloscope to pin 3 of 41IC1.
- Adjust 41L25 (coordinate 1A) until the DC level of the signal has the same DC level as blanking (black level).
- Repeat the adjustment.

Cut-off (G2)

- Set light to nominal value, RESET or SHIFT MUTE (Beolink 1000 MK III.
- Press PICTURE MUTE.
- Locate by means of an oscilloscope the test point on 3R1, 3R2 or 3R3 (oscilloscope photo No. 18) which has the highest test pulse voltage.
- Adjust the G2 potentiometer (PCB3) until the test pulse voltage is 160 V_{DC} (absolute maximum level).
- Press PICTURE MUTE upon completion of the adjustment.

⑱



Alternative Cut-off Adjustment

To get precise adjustment the procedure using oscilloscope, mentioned above, should be followed.

- Set the brilliance to the nominal value, RESET or SHIFT MUTE Beolink 1000 MK III.
- Press PICTURE MUTE and cover 9R17 (LDR).
- Use a voltmeter (Ri > 1MΩ) for measuring the voltage drop across 3R1, 3R2 and 3R3.
- Adjust by means of the G2 potentiometer (module 3) until there is a voltage of 2V across that resistor, 3R1, 3R2 or 3R3, which has the smallest voltage drop.
- Press PICTURE MUTE after completing the adjustment.

Module 1/38 Tuner & IF
AFC

To be adjusted only if 1/38IC4 is replaced.
- Short-circuit 1/38R100 (coordinate 5F).
- Short-circuit 1/38L13 (coordinate 3A).
- Connect a DC voltmeter to pin 5 of 1/38IC4 (coordinate 3B) and adjust 1/38L12 (coordinate 3B) until 6V is measured.
- Turn 1/38R204 (coordinate 3F) fully anticlockwise.
- Connect a DC voltmeter between pin 3 and pin 6 of 1/38IC9 (coordinate 4E) and adjust 1/38R196 (coordinate 5E) until 0.6V is measured.
- Connect a DC voltmeter to pin 3 of 1/38IC9 (coordinate 4E) and adjust 1/38R204 (coordinate 3F) until 6.3V is measured.
- Remove the short circuits across 1/38R100 and 1/38L13.

Video carrier 38.9 MHz

To be adjusted only if 1/38IC3 is replaced.
- Connect an oscilloscope to pin 8 of 1/38IC3 (coordinate 3C).
- Adjust 1/38L11 (coordinate 3C) until the front porch of the line sync pulse is as horizontal as possible.

Stop tuning

To be adjusted only if 1/38IC12 is replaced.
- Remove the aerial signal from the tuner.
- Connect a frequency counter to pin 5 of 1/38IC12 (coordinate 2A).
- Adjust 1/38R99 (coordinate 2A) until 15625 Hz is measured.

AGC

To be adjusted only if 1/38IC3 is replaced.
- Connect an aerial signal B/G or I.
- Turn 1/38R56 (coordinate 4D) fully clockwise, then turn it anticlockwise until the picture is just free of noise.

Video output

- Connect an oscilloscope to the emitter of 1/38TR17 (coordinate 2C).
- Adjust 1/38R167 (coordinate 2C) until 2Vpp is measured.

Sound mixer

To be adjusted only if 1/38IC3 is replaced.
- Connect an oscilloscope to pin 5 of 1/38IC3 (coordinate 3C) (x = 1µs).
- Adjust 1/38L9 (coordinate 3C) until the top and bottom of the signal are as parallel as possible.

Channel separation

- Connect an aerial signal with A2 stereo sound modulation.
- Connect an oscilloscope to pin 14 of 1/38IC2 (coordinate 1C).
- Adjust 1/38R17 (coordinate 1C) to minimum crosstalk.

Module 47 Picture-in-Picture

PLL ref. osc

- Connect a PAL test pattern (colour bar).
- Short-circuit 47J1 and 47J2 (coordinate 4A).
- Adjust 47C77 (coordinate 3B) to obtain the minimum colour roll in the colour bar.

If a PAL/NTSC B/G/M IF is installed in the TV set, 47C75 has to be adjusted, too.
- Adjust 47C75 (coordinate 4B) in the same way as 47C77. Only an NTSC M test pattern has to be connected to the TV set.

Cloche filter

- Connect a SECAM test pattern (colour bar).
- Adjust 47L5 (coordinate 3B) until the optimum colour graduations in the colour bar are achieved.

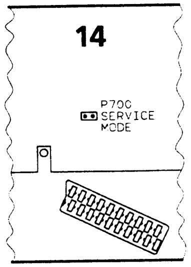
SECAM black level

- Connect a SECAM test pattern with black content.
- Connect an oscilloscope to pin 1 of 41IC4.
- Adjust 47R105 (coordinate 3A) until the DC level of the signal has the same DC level as blanking (black level).
- Connect an oscilloscope to pin 3 of 47IC4.
- Adjust 47L6 (coordinate 4A) until the DC level of the signal has the same DC level as blanking (black level).
- Repeat the adjustment.

REPAIR TIPS

Service mode

Bring the TV set into SERVICE MODE:
- remove the rear panel
- press TV
- short-circuit the SERVICE MODE plug, P700, on PCB14 briefly.



The service mode gives access to the following:
Picture and geometry adjustments, see the section SERVICE ADJUSTMENTS WITH BEOLINK 1000.

Display of the type and serial numbers of the TV set

3340	00000001	Last error no
Type number	Serial number	Last error condition

Picture tube

Two types of picture tubes are used in the TV, a Philips and a Videocolour type.
The two types require different picture mute time during start-up.
Philips 7-8 seconds.
Videocolour 11-12 seconds.

7-8 or 11-12 seconds can be selected in SERVICEMODE:
- Select Rdr in SERVICEMODE using « or »
- Press 8 for 7-8 seconds (Philips).
- Press 9 for 11-12 seconds (Videocolour).

As a sign of receipt of the command the TV leaves SERVICEMODE.

Last error

Permits the display of any last error condition.

The TV set is equipped with a number of safety circuits which become active in the event of an error occurring in the TV set and protect the set against damage as a consequence of such an error.

The following three error types are monitored:

- Power fail (e.g. overloading of a supply voltage).
- I^2C bus error.
- Error in EEPROM.

Display

Last error no = no error registered.
Last error pf = power fail.
Last error 00 up to and including FF = error somewhere on the I^{2}C bus.
Last error df = data failure (EEPROM 6IC6 perhaps defective).

The power fail circuit is a ring coupled system that detects whether or not one or several voltage stabilizations are overloaded. If that is the case, this is registered by the µC, which brings the TV set into stand-by.
The circuit operates as follows:
The µC, 6IC2, outputs a pulsating voltage at pin 10.
If there are no errors, the µC receives the signal back again at pin 12 6IC4.
If an overload condition occurs, the overloaded supply clamps the signal, and no signal is returned to pin 12.

The same signal, via 4C62, 4R84 and 4TR19, further causes the power-supply unit to switch ON.
If an error occurs such that the power-supply unit does not receive the pulsating voltage, the power-supply unit automatically goes into stand-by.

At power-up, the power fail return information is ignored for 400mS in order that the various power stabilizations may have time to adjust. During the 400mS period it is possible to measure e.g. where the pulsating voltage is loaded in the power fail system (see the power fail diagram on page 2-4).

The I^{2}C bus error system is integrated in the software that registers communication errors between the µC and the components which are controlled through the I^{2}C bus.
If such an error occurs, the µC brings the TV set into stand-by.

If an error occurs in the EEPROM (6IC6), such that it is not possible to transfer the basic settings of the TV set to the deflection section and the colour section, the µC replaces the missing data with standard values stored in the program memory.

Power-up with errors being ignored:
If a power fail or an I^{2}C bus error occur, which make the TV set go into stand-by every time it is attempted to be started, it is possible to start up the TV set in a mode in which the error is ignored.

The procedure is as follows:
- The TV set must be in stand-by.
- Short-circuit the SERVICE MODE plug, P700, on PCB14; the short circuit must be constant.
- If the stand-by/ON LED on the TV set emits orange light, the error is a power fail. If the LED emits red light, the error in question is a data failure or an I^{2}C bus error.
- Press [TV]. The LED will now emit green light.

- Remove the short circuit from the SERVICE MODE plug. The TV set will now start up in SERVICE MODE if that is possible.

The TV is now in SERVICE MODE but power fail and I^{2}C bus errors will be ignored until the next time the TV has been in stand-by mode.

IMPORTANT! If the TV is started up ignoring the power fail error it may result in serious damage to the TV (the stand-by/ON LED emits orange light).

I^{2}C bus error:

An I^{2}C bus error means that the communication on the bus failed when the µC tried to communicate with the address in question. In most cases this means that the ancillary component is defective. However, the error may also be caused by a different component which destroyed the communication just when the communication was taking place with the address listed as the Last Error.

Addresses in connection with I^{2}C bus errors:

Last error	
4E	1/38IC6, Tuner & IF port expander.
84	1/38IC2, A2 stereo decoder.
40	31IC7, NICAM stereo decoder.
42	39/41IC5, D/A converter for CUT-OFF and DRIVE.
22	37IC2, Teletext controller.
8C	13IC2, Deflection controller.
82	14IC1, Audio controller.
86	14IC9, Video controller.

After the repair of an error which has been listed as an error message in the error display, the error message must the corrected to read Last error no. This is accomplished by pressing [<] or [>] ([▲] or [▼]).

Display of the software version number:
The TV set should not be in SERVICE MODE.
Press
[TV] [MENU] [0] [0] [PLAY] or
[TV] [SHIFT] [TEXT] [0] [0] [PLAY].

Fault-finding in AFC circuits

Faults in the AFC circuits on Tuner & IF PCB1/38 will typically result in the tuning system searching down to the bottom or up to the top of the tuning range, or the TV will be unable to catch the right frequency when trying to tune in to a frequency.

The following guidelines may be employed in connection with fault-finding:
- Connect the aerial signal.
- Short-circuit 1/38R100 (coordinate 5F).
- Short-circuit 1/38L13 (coordinate 3A).
  The AFC has now been made inactive.
- Press [GOTO] [XXX] to tune in to a frequency.
- Press [GOTO] once more and check that FINE TUNE stands at the centre.

- Connect a DC voltmeter to pin 5 of 1/38IC9 (coordinate 4E). The voltage at pin 5 should be 6 ±0.3V. If that voltage is not correct, the fault is in 1/38IC4 or the components surrounding it.
- If the 6V at pin 5 is OK, connect a DC voltmeter to pin 3 of 1/38IC9. The voltage at pin 3 should be greater than 6V.
- Connect a DC voltmeter to pin 6 of 1/38IC9. The voltage at pin 6 should be less than 6V.
- If the voltages at pins 3 and 6 are not OK, the fault is in 1/38IC9, 1/38IC13 or the surrounding components.

Fault-finding in switch mode power supply

If faults occur in the switch mode power supply on PCB4, power supply & deflection, e.g. if TR1, BUT 12 become defective all the time, the following guidelines may be employed in connection with the fault-finding process:

- Disconnect the mains voltage and take out the chassis.
- Short-circuit the base-emitter of TR7 (R26), fig. 1.
- Solder a 1 kohm resistor to the connection between R24 and R25, fig. 1.
- Solder a 1kohm resistor to the cathode of D16.
- Solder a lead to the anode of D10 and connect the lead to the – socket of a 5V DC power supply, fig. 1.
- Solder a lead to the cathode of D12, solder the free end of the two 1kohm resistors to the lead, and connect the lead to the + socket of the 5V DC power supply, fig. 1.
- Connect the mid-point of the balanced ±5V DC power supply to J16 (ground), fig 1, and switch on the power supply.
- Connect an oscilloscope to points ①, ②, ③ and ④, figs. 1 and 2.
- When the measured pulses are like the oscilloscope pictures ①, ②, ③ and ④, figs. 1 and 2, the switch mode power supply is in order.

Fig. 1

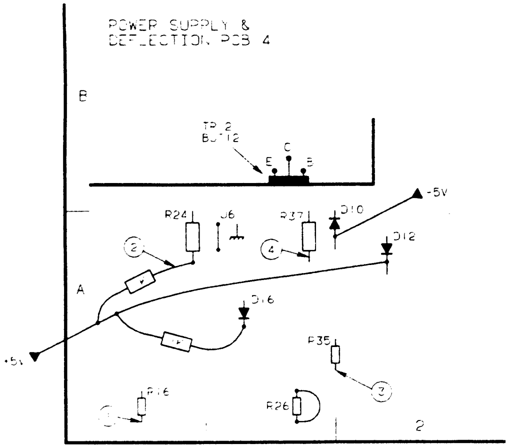
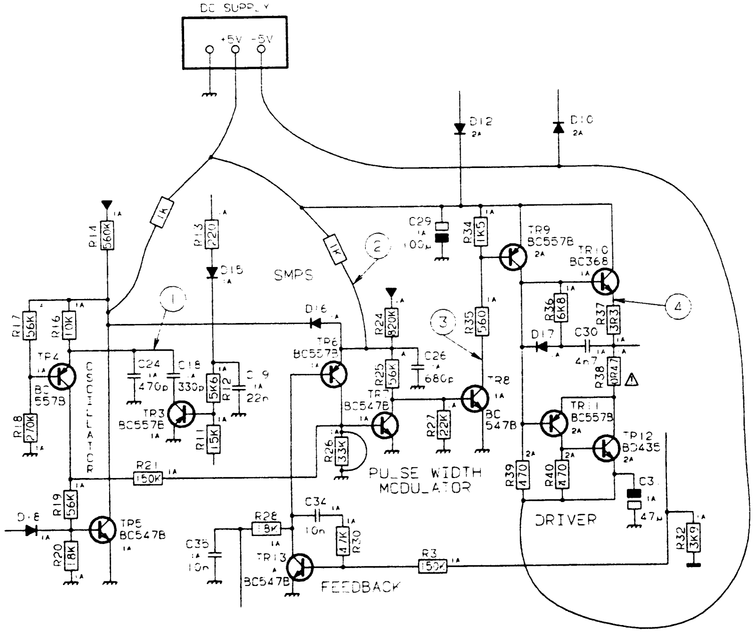
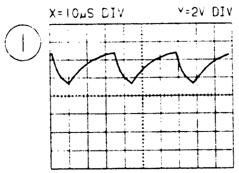
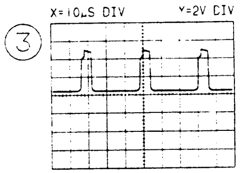
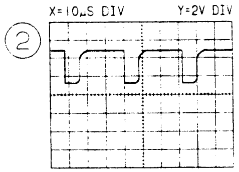

POWER SUPPLY &
DEFLECTION PCB 4
B
TR 2
BUT12
C
E
B
R24
J6
R37
D10
-5V
D12
②
④
A
D16
+5V
R35
③
R16
①
R26
2

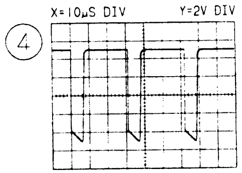
Fig. 2


DC SUPPLY
+5V
-5V
D12
D10
1K
1K
R14 560K
R13 220
D15
SMPS
C29 100µ
R34 1K5
TR9 BC557B
TR10 BC368
①
②
③
④
D16
R17 56K
R16 10K
TR4 BC557B
R24 820K
R35 560
D17
C30 4n7
R36 6K8
R37 3R3
R38 8R2
TR6 BC557B
C24 470p
C18 330p
C19 22n
R12 5K6
TR3 BC557B
R11 15K
OSCILLATOR
R25 56K
C26 680p
TR7 BC547B
TR8 BC547B
R27 22K
TR11 BC557B
TR12 BD435
R18 270K
R21 150K
R26 33K
PULSE WIDTH MODULATOR
R39 470
R40 470
C3 47µ
DRIVER
R32 3K9
D6
R19 56K
R20 1K8
TR5 BC547B
C34 10n
R28 5K
C35 10n
TR13 BC547B
R29 47K
R30
R3 150K
FEEDBACK



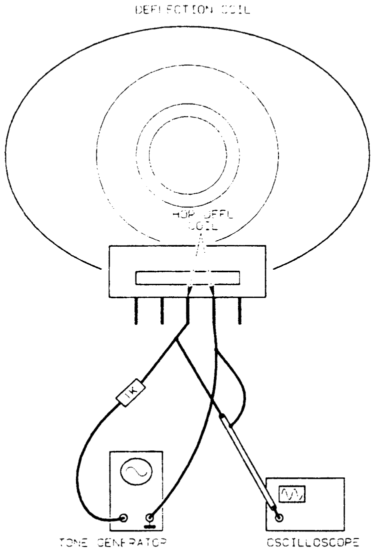






Guidelines for fault-finding in the horizontal deflection

- The TV set must not be connected to the mains.
- Connect a tone generator to the horizontal deflection coil via a 1 kohm resistor. The tone generator should produce a sine-wave signal of approx. 43 kHz, 100 mV, RMS.
- Connect an oscilloscope to the horizontal deflection coil.



- Check that the resonant frequency is 43 ±2 kHz by changing the frequency of the tone generator.
- If resonant frequencies within the 60 kHz - 90 kHz range are found, the reason for this fault may be one of the following: the EHT transformer 4T1 is short-circuited, the horizontal deflection coil is short-circuited or 4C102 is disconnected.

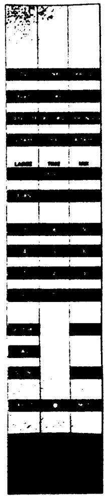
Separation of the E/W circuit and the horizontal deflection
- If the picture is wide and distorted: Disconnect the connection from 4L8 pin 1 to the E/W output (the drain of 4TR35 and the anode of 4D77). If the picture subsequently becomes narrow and has pincushion distortion, the diode modulator is OK.
- If the picture is narrow and distorted: Disconnect the connection from 4L8 pin 1 to the E/W circuit, and short-circuit pin 1 of 4L8 to ground. If the picture subsequently becomes wide and has pincushion distortion, the diode modulator is OK.

Automatic Cut-Off

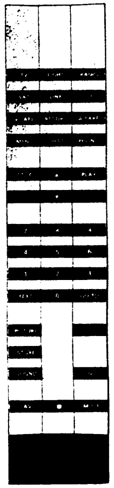
The automatic Cut-Off circuit automatically balances out the differences which occur among the cut-off points of the three electron guns during the life of the picture tube.

The automatic cut-off adjustment is achieved through the interaction of 39/41IC4, various components in the video output and the picture tube (the R, G and B feedback signals).
If one of the three electron guns requires higher driving, the DC level of the signal at the ancillary output (pins 1, 3 or 5) of 39/41IC4 will be increasing.

Beolink 1000 MK II



Beolink 1000 MK III



OPTIONS & SHIFT functions

OPTIONS
The TV can be programmed for several different options.

Option 0 = The IR receiver of the TV is disconnected.

Option 1 = Video and audio systems (Beolink system) placed in the same room.

Option 2 = Video and audio systems (Beolink system) placed in different rooms.

Option 5 = Master (the TV responds to both IR data codes and to AUX datalink codes).

Option 6 = Slave (the TV responds to IR data codes only).

Option 7 = Autoconfiguration. If the TV is set to option 5 and connected to an MCL 2AV, the TV is automatically set to option 7 = option 6, slave. If the MCL 2AV is disconnected from the TV, the TV will remain in option 6. Options 1 and 2 have no influence on autoconfiguration.

⇨

Programming example:
Press ● PICTURE 1 STORE
PICTURE 5 STORE = options 1 and 5.

If STORE is pressed, the stand-by LED will flash once, indicating that the command has been received.

Options 1 and 2 always have to be linked with option 5 or 6. The TV has been programmed for options 1 and 5 at the factory.

SHIFT functions

Press: GOTO SHIFT 3 = Switching between system BG and system L.

Press: SHIFT 7 = Non-Interlace.

Press: SHIFT 9 = The S-VHS input has now been selected.
These SHIFT functions are toggle functions.

The SHIFT 2 function:

By means of the SHIFT 2 function the TV can be locked to the selected programme for recording on a video tape recorder with one-way data communication. The operating procedure has been described on the basis of a Beolink 1000 MK III.

1. One video tape recorder connected:
   Select the source, TV or SAT, and then press RECORD RECORD SHIFT 2. The TV is now locked to the selected programme.
   To unlock the signal path again, press TV or SAT SHIFT 2.
2. Two video tape recorders (VTR1 and VTR2) connected:
   The signal path can be locked to only one of the video tape recorders at a time.

VTR1:
Select the source, TV or SAT, and then press RECORD RECORD SHIFT 2. The TV is now locked to the selected programme for recording on VTR1.
To unlock the signal path again, press V.TAPE TV or SAT SHIFT 2.

VTR2:
Select the source, TV or SAT, and then press SHIFT RECORD SHIFT RECORD SHIFT 2. The TV is now locked to recording on VTR2.
To unlock the signal path again, press SHIFT V.TAPE TV or SAT SHIFT 2.

SERVICE-EINSTELLUNGEN MIT BEOLINK 1000

Betriebsart 'SERVICEMODE'

TV-Gerät in SERVICEMODE bringen:
- Rückwandteil abnehmen.
- TV-Taste drücken.
- SERVICEMODE-Steckverbindung P700 auf PCB14 kurzzeitig kurzschließen.

Die Betriebsart 'SERVICEMODE' bietet die folgenden Service-Einstellmöglichkeiten:
(Wegen sonstiger Möglichkeiten in der Betriebsart 'SERVICEMODE' siehe Reparaturtips).

Bildeinstellungen:

Display		Einstellbereich
Rdr	Red drive	0-63
Grd	Green drive	0-63
Rcu	Red cut-off balance	0-63
Gcu	Green cut-off balance	0-63
BRI	BRIlliance preset	0-7
COL	COLour preset	0-7

Geometrieeinstellungen:

Display		Einstellbereich
Hfq	Horizontal frequency	0-63
Hph	Horizontal phase	0-63
Ham	Horizontal amplitude	0-63
Vam	Vertical amplutude	0-63
Vsc	Vertical s correction	0-63
Vsh	Vertical shift (centering)	0-63
Vli	Vertical liniarity	0-63
EWc	EW corner	0-63
EWp	EW parabola	0-63
EWt	EW tilt	0-63

Reset

Einstellen von Helligkeit (Brilliance), Farbsättigung (Colour) und Kontrast (Contrast) auf Nominalwerte:

- BRILLIANCE	32	PICTURE ^ v
- COLOUR	32	PICTURE ^ v
- CONTRAST	44	PICTURE ^ v

Zum Speichern der Werte im TV-Gerät sind die Tasten PICTURE STORE STORE zu drücken. Durch Drücken der RESET-Taste (oder SHIFT MUTE Beolink 1000 MK III, siehe Seite 5-23) kehrt das TV-Gerät zu diesen voreingestellten Werten zurück.

BEDIENUNG IN DER BETRIEBSART 'SERVICEMODE'

« »	Springen im Menü
	oder
‹ ›	
▲ ▼	Ändern des Wertes
STOP	Verlassen der Betriebsart 'SERVICEMODE'.

Beim Verlassen von 'SERVICEMODE' werden die gewählten Werte gespeichert. Die Klang- und Bildeinstellungen des TV-Gerätes mit Beolink 1000 funktionieren in der Betriebsart 'SERVICEMODE' auf normale Art.

Für die nachstehenden Abgleichungen ist ein normales Farbtestbild zu benutzen.

Voreinstellung (Preset)

Voreinstellung (Referenzniveau) von Helligkeit (Brilliance) und Farbsättigung (Colour).

- Helligkeit und Farbsättigung mit RESET (oder SHIFT MUTE Beolink 1000 MK III) auf Nominalwerte einstellen.
- TV-Gerät in Betriebsart 'SERVICEMODE' bringen.
- Helligkeit (BRI) auf korrekten Helligkeitsinhalt im Bild abgleichen (typisch 5).
- Farbsättigung (COL) auf korrekte Farbsättigung abgleichen (typisch 4).

Sperrpunkt-Balance
(Cut-off balance)

- Helligkeit mit RESET (oder SHIFT MUTE Beolink 1000 MK III) auf Nominalwert einstellen.
- Farbsättigung auf '0' einstellen.
- TV-Gerät in Betriebsart 'SERVICEMODE' bringen.
- Rote und grüne 'Cut-off-Balance (Rcu) und (Gcu) so lange abgleichen, bis die dunklen Felder im Testbild farblos sind.

Treiber (Drive)

- Helligkeit mit RESET (oder SHIFT MUTE Beolink 1000 MK III) auf Nominalwert einstellen.
- Farbsättigung auf '0' einstellen.
- TV-Gerät in Betriebsart 'SERVICEMODE' bringen.
- Roten und grünen Treiber (Rdr) und (Gdr) auf korrekten Weißton abgleichen.

HORIZONTAL-ABLENKUNG
Horizontalfrequenz

- Anschluß 5 des 13IC1 an Masse kurzschließen.
- 'Hfq' im 'SERVICEMODE'-Menü wählen.
- Horizontalfrequenz auf möglichst langsames horizontales Bildrollen abgleichen.
- Kurzschluß entfernen.

Ost-West-Parabel (EW parabola)

- 'EWp' im 'SERVICEMODE'-Menü wählen.
- Auf korrekte seitliche Bildrandgeometrie abgleichen.

Ost-West-Trapez (EW tilt)

- 'EWt' im 'SERVICEMODE'-Menü wählen.
- Auf korrekte Geometrie abgleichen (Vertikal-Zentrierung wird beeinflußt).

Ost-West-Bildecke (EW corner)

- 'EWc' im 'SERVICEMODE-Menü wählen.
- Auf korrekte Bildeckengeometrie abgleichen.

Horizontal-Amplitude

- 'Ham' im 'SERVICEMODE-Menü wählen.
- Auf korrekte Amplitude abgleichen.

Horizontal-Zentrierung/'Phase'

- Helligkeit (BRILLIANCE) auf Maximum einstellen.
- 'Ham' im 'SERVICEMODE'-Menü wählen und auf minimale Breite abgleichen.
- 'Hph' wählen und Bild zentrieren, so daß es innerhalb der Abtastzeit liegt.
- 'Ham' wählen und auf korrekte Breite abgleichen.
- Bild bestmöglich mit 3S1 zentrieren.
- 'Hph' wählen und nachträglich abgleichen.
- RESET-Taste (oder SHIFT MUTE Beolink 1000 MK III) drücken, um BRILLIANCE auf Nominalwert einzustellen.

VERTIKAL-ABLENKUNG
Vertikal-Amplitude
(Vertical amplitude)

- 'Vam' im 'SERVICEMODE'-Menü wählen.
- Auf korrekte Amplitude abgleichen.

Vertikal-Linearität
(Vertical liniarity)

- 'Vli' im 'SERVICEMODE-Menü wählen.
- Auf korrekte Linearität abgleichen.

Vertikale S-Korrektur
(Vertical s correction)

- 'Vsc' im 'SERVICEMODE-Menü wählen.
- Auf korrekte Zentrierung abgleichen (Ost-West-Bildecken werden beeinflußt).

Vertikal-Zentrierung
(Vertical shift)

- 'Vsh' im 'SERVICEMODE'-Menü wählen.
- Auf korrekte Zentrierung abgleichen (Ost-West-Trapez wird beeinflußt).

Falls notwendig, ist der Abgleichvorgang zu wiederholen.

ABGLEICHUNGEN

Bei den folgenden Abgleichungen ist das Gerät - falls nichts Gegenteiliges angeführt ist - an ein normales Farbtestbild anzuschließen.
Die Service-Einstellungen mit dem Beolink-Terminal müssen vorgenommen sein.

Modul 39/41 PAL/SECAM/NTSC-Decoder
Fokussierung

- Helligkeit und Farbsättigung mit RESET (oder SHIFT MUTE Beolink 1000 MK III) auf Nominalwerte einstellen.
- Kontrast auf Maximum einstellen.
- Mit dem Fokussierpotentiometer auf Modul 3 auf bestmögliche Fokussierung - ca. 10 cm vom Bildrand gesehen - abgleichen.

4,43 MHz-Chroma-Saugkreis

- PAL-Testbild (Farbbalken) anschließen.
- Oszilloskop an 39/41J10 (Koordinate 2C) anschließen.
- Mit 39/41L1 (Koordinate 1C) auf minimalen 4,43 MHz-Rest im Signal abgleichen.

PLL-Referenzoszillator

- PAL-Testbild (Farbbalken) anschließen.
- 39/41J6 und 39/41J7 (Koordinate 2B) kurzschließen.
- Mit 39/41C48 (Koordniate 1B) auf minimales Farbrollen im Farbbalken abgleichen.

Falls im TV-Gerät PAL/NTSC B/G/M ZF montiert ist, muß auch 41C46 abgeglichen werden.

- Mit 41C46 (Koordinate 1B) - genau wie bei 41C48 - abgleichen; das TV-Gerät muß aber hierzu an ein 'NTSC M'-Testbild angeschlossen sein.

'Cloche'-Filter

- SECAM-Testbild (Farbbalken) anschließen.
- Mit 41L22 (Koordinate 2C) auf bestmögliche Farbübergänge im Farbbalken abgleichen.

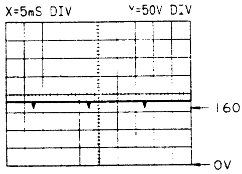
SECAM-Schwarzpegel

- SECAM-Farbtestbild mit schwarzem Inhalt anschließen.
- Oszilloskop an Anschluß 1 des 41IC1 anschließen.
- Mit 41R65 (Koordinate 1A) abgleichen, bis der DC-Pegel des Signals dem DC-Pegel des Austastsignals (Blanking) entspricht (Schwarzpegel).
- Oszilloskop an Anschluß 3 des 41IC1 anschließen.
- Mit 41L25 (Koordinate 1A) abgleichen, bis der DC-Pegel des Signals dem DC-Pegel des Austastsignals (Blanking) entspricht (Schwarzpegel).
- Abgleichvorgang wiederholen.

Cut-off (G2)

- Helligkeit auf den Nennwert einstellen, RESET oder SHIFT MUTE (Beolink 1000 MK III).
- Tasten PICTURE MUTE drücken.
- Mit einem Oszilloskop den Meßpunkt am 3R1, 3R2 oder 3R3 (Oszilloskopbild Nr. 18) ermitteln, der die höchste Meßpulsspannung ergibt.
- Mit dem G2-Potentiometer (PCB3) so lange abgleichen, bis die Meßpulsspannung bei 160 VDC liegt (absoluter Maximalpegel).
- Nach dieser Einstellung die Tasten PICTURE MUTE drücken.

⑱



Alternative Einstellung des Sperrpunkts (Cut-off)

Zur Einzielung einer genauen Einstellung ist das Verfahren mit Oszilloskop - wie oben beschrieben - zu befolgen.

- Helligkeit mit RESET (oder SHIFT MUTE Beolink 1000 MK III) auf Nominalwert einstellen.
- PICTURE MUTE-Tasten drücken und 9R17 (LDR) zudecken.
- Mit einem DC-Voltmeter (Ri > 1MΩ) den Spannungsabfall über 3R1, 3R2 und 3R3 messen.
- Mit dem G2-Potentiometer (Modul 3) so lange abgleichen, bis 2 V über denjenigen der Widerstände 3R1, 3R2 oder 3R3 gemessen werden, der den geringsten Spannungsabfall aufweist.
- Nach dem Abgleichvorgang die Tasten PICTURE MUTE drücken.

Modul 1/38 Tuner & ZF-Teil (Tuner & IF) AFC

Ist nur abzugleichen, wenn 1/38IC4 ausgetauscht worden ist.
- 1/38R100 (Koordinate 5F) kurzschließen.
- 1/38L13 (Koordinate 3A) kurzschließen.
- DC-Voltmeter an Anschluß 5 des 1/38IC4 (Koordinate 3B) anschließen, und so lange mit 1/38L12 (Koordinate 3B) abgleichen, bis 6 V gemessen werden.
- 1/38R204 (Koordinate 3F) ganz im Gegenuhrzeigersinn drehen.
- DC-Voltmeter zwischen Anschluß 3 und Anschluß 6 des 1/38IC9 (Koordinate 4E) anschließen und mit 1/38R196 (Koordinate 5E) abgleichen, bis 0,6 V gemessen werden.
- DC-Voltmeter an Anschluß 3 des 1/38IC9 (Koordinate 4E) anschließen und mit 1/38R204 (Koordinate 3F) abgleichen, bis 6,3 V gemessen werden.
- Kurzschlüsse über 1/38R100 und 1/38L13 entfernen.

Bildträger 38,9 MHz (Video carrier)

Ist nur abzugleichen, wenn 1/38IC3 ausgetauscht worden ist.
- Oszilloskop an Anschluß 8 des 1/38IC3 (Koordinate 3C) anschließen.
- Mit 1/38L11 (Koordinate 3C) auf möglichst horizontale vordere Schulter des Zeilensynchronisierimpulses abgleichen.

Stop Abstimmung (Stop tuning)

Ist nur abzugleichen, wenn 1/38IC12 ausgetauscht worden ist.
- Antennensignal vom Tuner entfernen.
- Frequenzzähler an Anschluß 5 des 1/38IC12 (Koordinate 2A) anschließen.
- Mit 1/38R99 (Koordinate 2A) so lange abgleichen, bis 15.625 Hz gemessen werden.

Automatische Verstärkungsregelung (AGC)

Ist nur abzugleichen, wenn 1/38IC3 ausgetauscht worden ist.
- Ein Antennensignal B/G oder I anschließen.
- 1/38R56 (Koordinate 4D) ganz im Uhrzeigersinn drehen, danach im Gegenuhrzeigersinn drehen, bis das Bild gerade rauschfrei ist.

Video-Ausgangssignal (Video output)

- Oszilloskop an den Emitter des 1/38TR17 (Koordinate 2C) anschließen.
- Mit 1/38R167 (Koordinate 2C) abgleichen, bis 2 Vpp gemessen werden.

Tonmischer (Sound mixer)

Ist nur abzugleichen, wenn 1/38IC3 ausgetauscht worden ist.
- Oszilloskop an Anschluß 5 des 1/38IC3 (Koordinate 3C) anschließen (x = 1 µS).
- Mit 1/38L9 (Koordinate 3C) so lange abgleichen, bis oberster und tiefster Teil des Signals möglichst parallel sind.

Kanaltrennung

- Antennensignal mit A2-Stereo-Tonmodulation anschließen.
- Oszilloskop an Anschluß 14 des 1/38IC2 (Koordinate 1C) anschließen.
- Mit 1/38R17 (Koordinate 1C) auf minimales Übersprechen abgleichen.

Modul 47 Picture-in-Picture PLL-Referenzoszillator

- PAL-Testbild (Farbbalken) anschließen.
- 47J1 und 47J2 (Koordinate 4A) kurzschließen.
- Mit 47C77 (Koordinate 3B) auf minimales Farbrollen im Farbbalken abgleichen.

Falls im TV-Gerät PAL/NTSC B/G/M ZF montiert ist, muß auch 47C75 abgeglichen werden.
- Mit 47C75 (Koordinate 4B) - genau wie bei 47C77 - abgleichen; das TV-Gerät muß aber hierzu an ein 'NTSC M'-Testbild angeschlossen sein.

'Cloche'-Filter

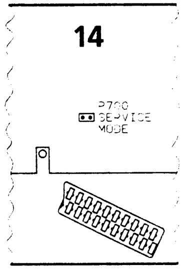
- SECAM-Testbild (Farbbalken) anschließen.
- Mit 47L5 (Koordinate 3B) auf bestmögliche Farbübergänge im Farbbalken abgleichen.

SECAM-Schwarzpegel

- SECAM-Farbtestbild mit schwarzem Inhalt anschließen.
- Oszilloskop an Anschluß 1 des 47IC4 anschließen.
- Mit 47R105 (Koordinate 3A) abgleichen, bis der DC-Pegel des Signals dem DC-Pegel des Austastsignals (Blanking) entspricht (Schwarzpegel).
- Oszilloskop an Anschluß 3 des 47IC4 anschließen.
- Mit 47L6 (Koordinate 4A) abgleichen, bis der DC-Pegel des Signals dem DC-Pegel des Austastsignals (Blanking) entspricht (Schwarzpegel).
- Abgleichvorgang wiederholen.

REPARATURTIPS
Betriebsart 'SERVICEMODE'

TV-Gerät in SERVICEMODE bringen:
- Rückwandteil abnehmen.
- TV-Taste drücken.
- SERVICEMODE-Steckverbindung P700 auf PCB14 kurzzeitig kurzschließen.



Die Betriebsart 'SERVICEMODE' bietet die folgenden Einstellmöglichkeiten:
Bild- und Geometrieeinstellungen, siehe hierzu den Abschnitt SERVICE-EINSTELLUNGEN MIT BEOLINK 1000.

Auslesen von Typ- und Seriennummer des Gerätes

3340	00000001	Last error no
Typnummer	Seriennummer	Letzter Fehlerzustand

Bildröhren

Für das Fernsehgerät werden zwei verschiedene Bildröhrentypen verwendet - einen Philips-Typ und einen Videocolour-Typ.
Die beiden Bildröhrentypen erfordern beim Einschalten des Fernsehgerätes unterschiedlich lange Bild-Mute-Zeiten:
Philips 7-8 Sekunden.
Videocolour 11-12 Sekunden.

Diese Zeiten - 7-8 oder 11-12 Sekunden - können in der Betriebsart SERVICEMODE gewählt werden:
- In SERVICEMODE mit den Tasten << oder >> Rdr wählen.
- Für 7-8 Sekunden auf 8 drücken (Philips).
- Für 11-12 Sekunden auf 9 drücken (Videocolour).

Als Bestätigung dafür, daß der Befehl korrekt empfangen worden ist, schaltet sich das Fernsehgerät aus der Betriebsart SERVICEMODE heraus.

'Last error'

Ermöglicht das Auslesen eines etwaigen letzten Fehlerzustandes.

Das TV-Gerät weist eine Reihe von Sicherungskreisen auf, die bei Fehlern im Gerät in Funktion treten und das Gerät vor Folgeschäden schützen.

Die folgenden drei Fehlertypen werden überwacht:

- Stromausfall (Power fail) (z.B. Überlastung einer Versorgungsspannung).
- I^{2}C-Bus-Fehler
- EEPROM-Fehler

Auslesungen

Last error no = Kein Fehler registriert.
Last error pf = Stromausfall (Power fail).
Last error 00 bis einschl. FF = Fehler am I^{2}C-Bus.
Last error df = Datenfehler (Data failure) (EEPROM 6IC6 möglicherweise fehlerhaft).

Beim 'Power fail'-Kreis handelt es sich um ein als Ringnetz gekoppeltes System, das erkennt, ob eine oder mehrere Spannungsstabilisierungen überlastet sind. Ist dies der Fall, so wird dies vom Mikrocomputer (µC) registriert, der daraufhin das Gerät in die Stellung 'Stand-by' schaltet.

Der Kreis funktioniert so, daß der Mikrocomputer 6IC2 eine pulsierende Spannung auf Anschluß 10 hinausgibt.
Wenn keine Fehler erkannt werden, gelangt das Signal wieder zurück zum Anschluß 12 6IC4 des Mikrocomputers.

Falls eine Überlastung entsteht, klemmt die überlastete Versorgung das Signal an, und es trifft kein Signal am Anschluß 12 ein.

Dasselbe Signal bringt außerdem über 4C62, 4R84 und 4TR19 das Netzteil in den EIN-Zustand.

Falls ein Fehler entsteht, so daß dem Netzteil die vorgenannte pulsierende Spannung nicht zugeführt wird, schaltet das Netzteil automatisch in die Stellung 'Stand-by'.

Beim Anlaufen wird die 'Power fail'-Rückmeldung während der Dauer von 400 ms ignoriert, damit sich die verschiedenen Spannungsstabilisierungen korrekt einstellen können. Während dieser 400 ms kann man evtl. messen, wo die pulsierende Spannung im 'Power fail'-System belastet wird (siehe hierzu 'Power fail'- Diagramm, Seite 2-4).

Beim I^{2}C-Bus-Fehlersystem handelt es sich um einen Teil der Software, welche Kommunikationsfehler zwischen dem Mikrocomputer und den über den I^{2}C-Bus gesteuerten Komponenten registriert.
Falls ein solcher Kommunikationsfehler entsteht, schaltet der Mikrocomputer das Gerät in 'Stand-by'.

Falls im EEPROM (6IC6) ein Fehler entsteht, so daß sich die Grundeinstellungen des Gerätes nicht auf den Ablenk- und Farbteil übertragen lassen, ersetzt der Mikrocomputer die fehlenden Daten durch im Programmspeicher abgespeicherte Standardwerte.

Einschalten des Gerätes bei Ignorierung von Fehler(n): Bei Stromausfall (Power fail) oder I^{2}C-Bus-Fehlern, bei denen das TV-Gerät bei jedem Einschaltversuch in die Stellung 'Stand-by' zurückschaltet, ist es möglich, das TV-Gerät aus einem Zustand einzuschalten, in dem der Fehler ignoriert wird.

Hierzu ist wie folgt zu verfahren:
- Das TV-Gerät muß sich in der Stellung 'Stand-by' befinden.
- Die SERVICEMODE-Steckverbindung P700 auf PCB14 ist kurzszuschließen; der Kurzschluß muß permanent sein.
- Falls die 'Stand-by'/ON-LED orange leuchtet, handelt es sich bei dem Fehler um einen Stromausfallfehler. Leuchtet die LED rot, so ist von einem Datenfehler oder IC-Bus-Fehler die Rede.
- Jetzt die Taste TV drücken. Die LED leuchtet jetzt grün.
- Kurzschluß der SERVICEMODE-Steckverbindung entfernen. Das TV-Gerät startet jetzt in der Betriebsart 'SERVICEMODE', sofern dies überhaupt möglich ist.

⇨

Das TV-Gerät befindet sich jetzt in der Betriebsart 'SERVICEMODE', aber Stromausfall- und I^2C-Bus-Fehlern werden so lange ignoriert, bis das TV-Gerät das nächste Mal in 'Stand-by' geschaltet wird.

ACHTUNG! Wenn das TV-Gerät bei Ignorierung von Stromausfallfehlern eingeschaltet wird, kann dies zu umfassenden Zerstörungen im Gerät führen ('Stand-by'/ON LED leuchtet orange).

I^2C-Bus-Fehlern

Ein I^2C-Bus-Fehler bewirkt Kommunikationsausfall auf dem Bus, so daß der Mikrocomputer mit einer gegebenen Adresse nicht mehr kommunizieren kann. In den meisten Fallen bedeutet dies, daß die zugehörige Komponente fehlerhaft ist. Der Fehler kann auch auf eine andere Komponente zurückzuführen sein, die die Kommunikation gerade in dem Moment stört, in dem mit der Adresse, die als letzter Fehlerzustand ('Last error') angeführt ist, kommuniziert wurde.

Adressen bei I^2C-Bus-Fehlern:

Last error	
4E	1/38IC6, Tuner & ZF Port-Expander.
84	1/38IC2, A2 Stereo-Decoder.
40	31IC7, NICAM Stereo-Decoder.
42	39/41IC5, D/A-Umsetzer für 'CUT-OFF' und 'DRIVE'.
22	37IC2, Videotext-(Teletext)-Controller.
8C	13IC2, Ablenk-Controller.
82	14IC1, Ton-Controller.
86	14IC9, Video-Umschalter.

Nach der Reparatur eines Fehlers, der durch eine Fehlermeldung angezeigt gewesen ist, ist die Fehlermeldung durch 'Last error no' zu berichtigen. Dies erfolgt durch Drücken der < -oder > -(▲ oder ▼) Taste.

Auslesen der Nummer der Software-Version:
Das TV-Gerät soll nicht in der Betriebsart 'SERVICEMODE' geschaltet sein!
Tastenbetätigung:
TV MENU 0 0 PLAY oder
TV SHIFT TEXT 0 0 PLAY.

Fehlersuche in AFC-Schaltkreisen

Fehler in den AFC-Schaltkreisen des Tuner & ZF-Teils (Tuner & IF) PCB1/38 werden typisch zur Folge haben, daß das Abstimmsystem im Abstimmbereich ganz ab- oder aufwärts gezogen wird, oder daß das TV-Gerät die korrekte Frequenz nicht 'fangen' kann, wenn man versucht, auf eine Frequenz abzustimmen.

Es können die folgenden Richtlinien bei der Fehlersuche benutzt werden:
- Antennensignal anschließen.
- Zuerst 1/38R100 (Koordinate 5F) kurzschließen.
- Dann 1/38L13 (Koordinate 3A) kurzschließen - jetzt ist die AFC inaktiv.
- GOTO XXX drücken, um auf eine Frequenz abzustimmen.
- GOTO noch einmal drücken, um festzustellen, daß FINE TUNE in der Mitte liegt.
- DC-Voltmeter an Anschluß 5 des 1/38IC9 (Koordinate 4E) anschließen; die Spannung am Anschluß 5 muß bei 6 V ±0,3 V liegen.
  Ist die Spannung nicht richtig, so liegt der Fehler im 1/38IC4 oder in den benachbarten Komponenten.
- Falls die 6 V am Anschluß 5 in Ordnung sind, ist das DC-Voltmeter an Anschluß 3 des 1/38IC9 anzuschließen; die Spannung am Anschluß 3 muß höher sein als 6 V.

⇨

- DC-Voltmeter an Anschluß 6 des 1/38IC9 anschließen; die Spannung am Anschluß 6 muß niedriger sein als 6 V.
- Sind die Spannungen an den Anschlüssen 3 und 6 nicht in Ordnung, so liegt der Fehler im 1/38IC9, 1/38IC13 oder in den benachbarten Komponenten.

Fehlersuche in der Schaltnetzteilversorgung

Bei Fehlern in der Schaltnetzteilversorgung auf PCB4 (Power Supply & Deflection), wodurch z.B. TR1, BUT 12 die ganze Zeit fehlerhaft werden, können die folgenden Richtlinien bei der Fehlersuche benutzt werden:

- Netzspannung unterbrechen und Chassis herausnehmen.
- Basis-Emitter des TR7 (R26) kurzschließen, Abb. 1.
- Einen 1 kOhm-Widerstand im Mittelpunkt für R24 und R25 anlöten, Abb. 1.
- Einen 1 kOhm-Widerstand an der Kathode der D16 anlöten.
- Eine Leitung an der Anode der D10 anlöten und Leitung an die Minus-Buchse (-) einer 5 V-DC-Stromversorgung anschließen, Abb. 1.
- Eine Leitung an der Kathode der D12 anlöten, das freie Ende der beiden 1 kOhm-Widerstände an der Leitung festlöten und die Leitung an die Plus-Buchse (+) einer 5 V-DC-Stromversorgung anschließen, Abb. 1.
- Mittelpunkt der balancierten ±5 V-DC-Stromversorgung an J16 (Masse) anschließen, Abb. 1, und Stromversorgung einschalten.
- Oszilloskop in den Punkten ①, ②, ③ und ④ anschließen, Abb. 1 und 2.
- Wenn die gemessenen Impulse den Oszilloskopbildern ①, ②, ③ und ④ entsprechen, Abb. 1 und 2, ist die Schaltnetzteilversorgung in Ordnung.

Abb. 1

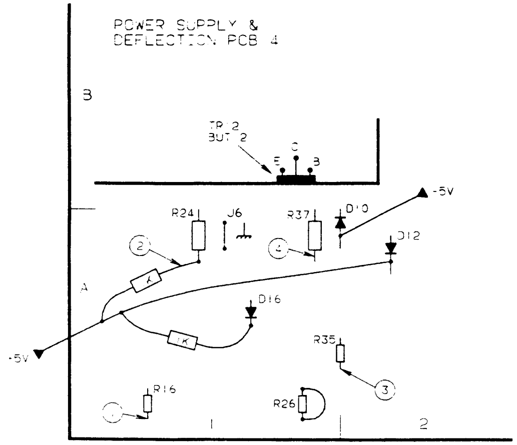
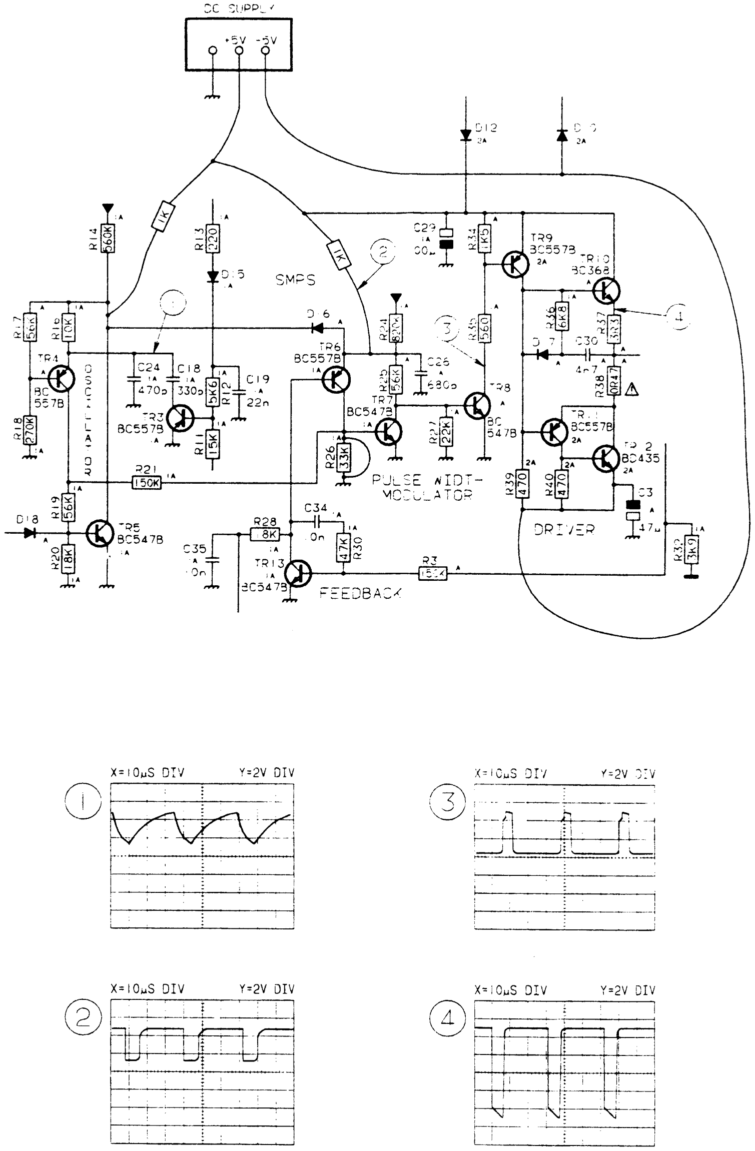
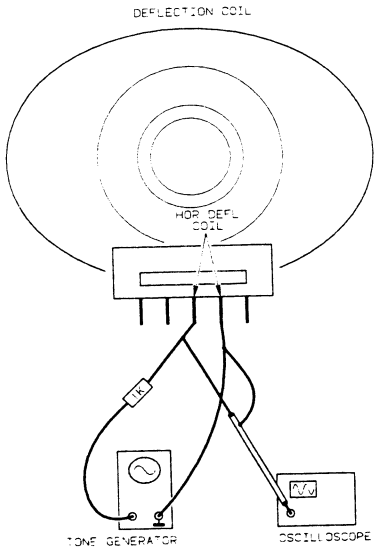

POWER SUPPLY &
DEFLECTION PCB 4
B
TP 2
BUT 2
E
C
B
R24
J6
R37
D10
-5V
D12
②
④
A
D16
-5V
R35
③
R16
①
R26
1
2

Abb. 2


DC SUPPLY
+5V -5V
D12
D10
1K
1K
R14 560K
R13 220
D15
SMPS
D6
C29
R34 1K5
TR9 BC557B
TR10 BC368
R17 56K
R16 10K
TR4 BC557B
R18 270K
C24 470p
C18 330p
R12 5K6
C19 22n
TR3 BC557B
R11 15K
R21 150K
TR6 BC557B
R24 820K
R25 56K
C26 680p
TR7 BC547B
TR8 BC547B
R27 22K
R26 33K
R35 560
D7
C30 4n7
R36 6K8
R37 3K3
R38 8R47
TR11 BC557B
TR2 BD435
C3 47µ
PULSE WIDTH-
MODULATOR
DRIVER
R39 470
R40 470
R19 56K
D18
TR5 BC547B
R20 18K
R28 8K
C34 0n
R30 47K
C35 10n
TR13 BC547B
R3 15K
FEEDBACK
R32 3K9
①
②
③
④
X=10µS DIV
Y=2V DIV

Richtlinien für die Fehlersuche im Horizontal–Ablenkteil

- TV-Gerät darf nicht ans Netz angeschlossen werden.
- Tongenerator an die horizontale Ablenkspule über einen 1-kOhm-Widerstand anschließen. Der Tongenerator muß ein Sinussignal von ca. 43 kHz 100 mV (RMS) abgeben.
- Oszilloskop an die horizontale Ablenkspule anschließen.



- Prüfen, daß die Resonanzfrequenz bei 43 ±2 kHz liegt, indem die Frequenz des Tongenerators geändert wird.
  Falls Resonanzfrequenzen im Bereich 60 kHz - 90 kHz festgestellt werden, kann die Fehlerursache die folgende sein:
  EHT-Transformator 4T1 kurzgeschlossen, Horizontal-Ablenkspule kurzgeschlossen oder 4C102 unterbrochen.

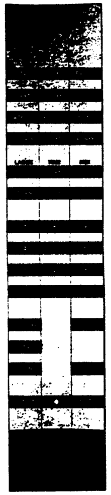
Zerlegung des Ost-West-Kreises (E/W) und des Horizontal-Ablenkteils
- Bei breitem und verzerrtem Bild: Verbindung vom Anschluß 1 der 4L8 zum Ost-West-Ausgang unterbrechen (Drain des 4TR35 und Anode der 4D77). Falls das Bild danach schmal und kissenverzerrt erscheint, ist der Diodenmodulator in Ordnung.
- Bei schmalem und verzerrtem Bild: Verbindung vom Anschluß 1 der 4L8 zum Ost-West-Ausgang unterbrechen und Anschluß 1 der 4L8 an Masse kurzschließen. Falls das Bild danach breit und kissenverzerrt erscheint, ist der Diodenmodulator in Ordnung.

Automatischer Sperrpunkt (Cut-off)

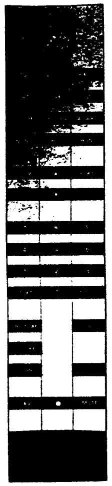
Der automatische 'Cut-off'-Schaltkreis gleicht automatisch die Unterschiede aus, die im Laufe der Bildröhrenlebensdauer zwischen den Sperrpunkten der drei Elektronenkanonen entstehen.

Der automatische Sperrpunktausgleich erfolgt im Zusammenwirken zwischen 39/41IC4, einigen Komponenten am Videoausgang und der Bildröhre (den R-, G- und B-'Feed-back'-Signalen).
Falls für eine der drei Elektronenkanonen eine höhere Aussteuerung erforderlich ist, wird der DC-Signalpegel am entsprechenden Ausgang (Anschluß 1, 3 oder 5) des 39/41IC4 ansteigen.

Beolink 1000 MK II



Beolink 1000 MK III



'OPTIONS & SHIFT'-Funktionen

OPTIONEN

Das TV-Gerät ist für mehrere verschiedene Optionen programmierbar.

Option 0 = IR-Empfänger des TV-Gerätes wird abgeschaltet.

Option 1 = Video- und Audiosystem (Beolink-System) im selben Zimmer.

Option 2 = Video- und Audiosystem (Beolink-System) in verschiedenen Zimmern.

Option 5 = Master (das TV-Gerät reagiert sowohl auf IR-Daten-Codes als auch auf AUX-Datenlink-Codes).

Option 6 = Slave (das TV-Gerät reagiert nur auf IR-Daten-Codes).

Option 7 = Autokonfiguration. Falls das TV-Gerät in Option 5 steht und mit einem MCL 2AV verknüpft wird, schaltet das TV-Gerät automatisch in Option 7 = Option 6, Slave. Falls MCL 2AV wieder vom TV-Gerät getrennt wird, verbleibt das TV-Gerät in Option 6. Option 1 und 2 haben keinen Einfluß auf 'Autokonfiguration'.

Programmierungsbeispiel:
Tastenbetätigung
● PICTURE 1 STORE
PICTURE 5 STORE = option 1 und 5.

Beim Drücken auf STORE blinkt die Standby-LED einmal, was anzeigt, daß der Befehl empfangen ist.

Option 1 und 2 sind immer mit Option 5 oder Option 6 zu programmieren. Das TV-Gerät ist werksseitig auf Option 1 und 5 programmiert.

'SHIFT'-Funktionen

Tastenbetätigung
GOTO SHIFT 3 = Umschaltung zwischen System BG und L.

Tastenbetätigung
SHIFT 7 = Non-Interlace.

Tastenbetätigung
SHIFT 9 = S-VHS-Eingang wurde gewählt.
Bei diesen 'SHIFT'-Funktionen handelt es sich um Kippschalt-Funktionen.

'SHIFT' 2-Funktionen:

Mittels der 'SHIFT' 2-Funktion läßt sich das TV-Gerät auf dem gewählten Programm zur Aufzeichnung auf einem Videorecorder mit Einweg-Datenkommunikation verrasten. Die Bedienung ist aufgrund von Beolink MK III beschreiben.

1. Anschluß von 1 Videorecorder:
   Anwahl von Quelle, TV oder SAT, danach Eingabe von RECORD RECORD SHIFT 2. Das TV-Gerät ist jetzt zuf dem gewählten Programm fest eingerastet. Zum 'Ausrasten' aus dieser Stellung ist die folgende Eingabe erforderlich: TV oder SAT SHIFT 2.

2. Anschluß von 2 Videorecordern (VTR1 und VTR2):
   Der Signalweg kann nur mit jeweils einem der Videorecorder verrastet werden.

VTR1:
Anwahl von Quelle, TV oder SAT, danach Eingabe von RECORD RECORD SHIFT 2. Das TV-Gerät ist jetzt auf dem gewählten Programm zur Aufzeichnung auf VTR1 fest eingerastet.
Zum 'Ausrasten' aus dieser Stellung ist die folgende Eingabe erforderlich: V.TAPE TV oder SAT SHIFT 2.

VTR2:
Anwahl von Quelle, TV oder SAT, danach Eingabe von SHIFT RECORD SHIFT RECORD SHIFT 2. Das TV-Gerät ist jetzt auf dem gewählten Programm zur Aufzeichnung auf VTR2 fest eingerastet. Zum 'Ausrasten' aus dieser Stellung ist die folgende Eingabe erforderlich: SHIFT V.TAPE TV oder SAT SHIFT 2.

REGLAGES DE MAINTENANCE, BEOLINK 1000

Mode de maintenance

Amener le téléviseur en MODE DE MAINTENANCE :
- Déposer la face arrière.
- Appuyer sur la touche TV.
- Court-circuiter brièvement la fiche «MODE DE MAINTENANCE» (P700) au niveau de la carte PCB14.

Le MODE DE MAINTENANCE permet de procéder au réglage suivant:
(Se reporter aux conseils de réparation pour connaître les autres possibilités offertes par ce mode).

Réglages de l'image :

Affichage		Plage de régulation
Rdr	Red drive	0-63
Gdr	Green drive	0-63
Rcu	Red cut off balance	0-63
Gcu	Green cut off balance	0-63
BRI	Brilliance preset	0-7
COL	COLour preset	0-7

Réglages de la géométrie :

Affichage		Plage de régulation
Hfq	Horizontal frequency	0-63
Hph	Horizontal phase	0-63
Ham	Horizontal amplitude	0-63
Vam	Vertical amplitude	0-63
Vsc	Vertical S correction	0-63
Vsh	Vertical shift (centrage)	0-63
Vli	Vertical liniarity	0-63
EWc	EW corner	0-63
EWp	EW parabola	0-63
EWt	EW tilt	0-63

Remise à l'état initial

Amener la luminosité, la saturation des couleurs et le contraste sur leur valeur nominale :

- BRILLIANCE 32	PICTURE ^ v
- COLOUR 32	PICTURE ^ v
- CONTRAST 44	PICTURE ^ v

Mémoriser les valeurs dans le téléviseur en appuyant sur les touches PICTURE STORE STORE. Il est ainsi possible de les rappeller en appuyant sur la touche RESET ou sur SHIFT MUTE (Beolink 1000, version III) voir page 5-36.

Commande en MODE DE MAINTENANCE

« »	Déplacement pas à pas dans le menu
< >	ou sur
▲ ▼	Modification de la valeur
STOP	Sortie du mode de maintenance

Les valeurs sélectionnées sont mémorisées en sortant du MODE DE MAINTENANCE.
Avec le Beolink 1000, la régulation des surfaces sonores et images fonctionne en MODE DE MAINTENANCE.

En règle générale, les réglages suivants mettent en oeuvre une mire couleur.

Preset

Préréglage (niveau de référence) de la luminosité et de la saturation des couleurs.
- Régler la luminosité et la saturation des couleurs sur leur valeur nominale RESET ou SHIFT MUTE, Beolink 1000,version III.
- Amener le téléviseur en MODE DE MAINTENANCE.
- Régler la luminosité (BRI) pour obtenir une composante lumineuse correcte dans l'image (en générale, 5).
- Régler la saturation des couleurs (COL) pour obtenir une saturation correcte (en général, 4).

Cut-off balance

- Régler la luminosité sur la valeur nominale RESET ou SHIFT MUTE, Beolink 1000, version III.
- Régler la saturation des couleurs sur "0".
- Amener le téléviseur en MODE DE MAINTENANCE.
- Régler la balance de coupure des signaux rouge et vert (Rcu) et (Gcu) jusqu'à ce que les champs foncés de la mire deviennent incolores.

Drive

- Régler la luminosité sur la valeur nominale RESET ou SHIFT MUTE, Beolink 1000, version III.
- Régler la saturation des couleurs sur "0".
- Amener le téléviseur en MODE DE MAINTENANCE.
- Régler les signaux chroma rouge (Rdr) et vert (Gdr) pour obtenir le blanc de référence correct.

DEVIATION HORIZONTALE
Fréquence ligne

- Court-circuiter la borne 5 de 13IC1 à la masse.
- Sélectionner Hfq en MODE DE MAINTENANCE.
- Régler la fréquence ligne pour obtenir le défilement horizontal le plus lent possible de l'image.
- Remédier au court-circuit.

Parabole est/ouest

- Sélectionner EWp en MODE DE MAINTENANCE.
- Régler pour obtenir une géométrie correcte sur les côtés.

Distorsion est/ouest

- Sélectionner EWt en MODE DE MAINTENANCE.
- Régler pour obtenir une géometrie correcte (le centrage vertical s'en trouve affecté).

Coins est/ouest

- Sélectionner EWc en MODE DE MAINTENANCE.
- Régler pour obtenir une géométrie correcte dans les coins.

Amplitude horizontale

- Sélectionner Ham en MODE DE MAINTENANCE.
- Régler pour obtenir l'amplitude correcte.

Centrage horizontal/"phase"

- Régler la luminosité (BRILLIANCE) sur la valeur maximale.
- Sélectionner Ham en MODE DE MAINTENANCE et régler pour obtenir une largeur maximale.
- Sélectionner Hph et centrer l'image pour qu'elle soit comprise dans le temps de balayage.
- Sélectionner Ham et régler pour obtenir une largeur correcte.
- A l'aide de 3S1, centrer l'image du mieux possible.
- Sélectionner Hph et affiner le réglage.
- Appuyer sur RESET ou SHIFT MUTE, (Beolink 1000, version III) pour régler la fonction BRILLIANCE sur la valeur nominale.

DEVIATION VERTICALE

Amplitude verticale

- Sélectionner Vam en MODE DE MAINTENANCE.
- Régler pour obtenir une amplitude correcte.

Linéarité verticale

- Sélectionner Vli en MODE DE MAINTENANCE.
- Régler pour obtenir la linéarité correcte.

Correction S verticale

- Sélectionner Vsc en MODE DE MAINTENANCE.
- Régler pour obtenir une géométrie correcte (la fonction "coin est/ouest" s'en trouve affectée).

Centrage vertical

- Sélectionner Vsh en MODE DE MAINTENANCE.
- Régler pour obtenir un centrage correct (la fonction "distorsion est/ouest" s'en trouve affectée).

Le cas échéant, répéter le procédure de réglage.

NOTICE DE REGLAGE

Sauf indication contraire, le récepteur doit être raccordé à une mire couleur traditionnelle lors des réglages suivants.
Il est impératif d'avoir effectué les réglages de maintenance à l'aide de la télécommande.

Décodeur 39/41 PAL/SECAM/ NTSC
Concentration

- Régler la luminosité et la saturation des couleurs sur les valeurs nominales RESET ou SHIFT MUTE, Beolink 1000, version III.
- Régler le contraste sur la valeur maximale.
- A l'aide du potentiomètre correspondant du module 3, régler pour obtenir une concentration optimale observée à une dizaine de centimètres du bord de l'écran.

Filtre de chrominance 4,43 MHz

- Raccorder une mire PAL (barres de couleurs).
- Raccorder un oscilloscope à 39/41J10 (coordonnées 2C).
- Régler 39/41L1 (coordonnées 1C) sur la fréquence résiduelle de 4,43 MHz du signal.

Osc réf. PLL

- Raccorder une mire PAL (barres de couleurs).
- Court-circuiter 39/41J6 et 39/41J7 (coordonnées 2B).
- Régler 39/41C48 (coordonnées 1B) pour obtenir un défilement minimal des couleurs de la barre.

Il convient également de régler 41C46 en présence d'une FI PAL/NTSC B/G/M.
- Régler 41C46 (coordonnées 1B) à l'image de 41C48. Le téléviseur doit toutefois être raccordé à une mire NTSC M.

Filtre en cloche

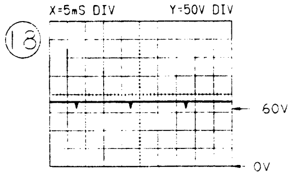
- Raccorder une mire SECAM (barres de couleurs).
- Régler 41L22 (coordonnées 2C) pour obtenir une transition optimale dans la barres de couleurs.

Niveau du noir SECAM

- Raccorder une mire couleurs SECAM présentant une composante noire.
- Raccorder un oscilloscope à la borne 1 de 41IC1.
- Régler 41R65 (coordonnées 1A) pour que le niveau cc du signal soit identique à celui de la valeur de suppression (niveau du noir).
- Raccorder un oscilloscope à la borne 3 de 41IC1.
- Régler 41L25 (coordonnées 1A) pour que le niveau cc du signal soit identique à celui de la valeur de suppression (niveau du noir).
- Répéter le réglage.

Point de coupure (G2)

- Régler la luminosité sur la valeur nominale, RESET ou SHIFT MUTE (Beolink 1000 MK version III).
- Appuyer sur PICTURE MUTE.
- A l'aide d'un oscilloscope, définir en 3R1, 3R2 ou 3R3 le point de mesure présentant la tension d'impulsion la plus élevée (photo n° 18 de l'oscilloscope.
- A l'aide du potentiomètre G2 (carte PCB3), régler jusqu'a obtenir une tension d'impulsion de 160 Vcc (niveau absolu maximal).
- A l'issue du réglage, appuyer sur PICTURE MUTE.



Regulation de point de coupure alternative

Il convient de respecter le mode opératoire ci-dessus faisant intervenir un oscilloscope pour obtenir un réglage précis.

- Régler la luminosité sur la valeur nominale RESET ou SHIFT MUTE, Beolink 1000, version III.
- Appuyer sur PICTURE MUTE et couvrir le 9R17 (LDR).
- A l'aide d'un voltmètre cc (Ri > 1 MΩ), mesurer la chute de tension au niveau de 3R1, 3R2 et 3R3.
- Se servir du potentiomètre G2 (module 3) pour obtenir 2 V au niveau de la cellule 3R1, 3R2 ou 3R3 qui présente la plus petite chute de tension.
- A l'issue du réglage, appuyer sur PICTURE MUTE.

Module 1/38 Tuner & FI
CAF

Ne régler qu'en cas de remplacement de 1/38IC4.
- Court-circuiter 1/38R100 (coordonnées 5F).
- Court-circuiter 1/38L13 (coordonnées 3A).
- Raccorder un voltmètre cc à la borne 5 de 1/38IC4 (coordonnées 3B) et régler 1/38L12 (coordonnées 3B) pour obtenir 6V.
- Tourner 1/38R204 (coordonnées 3F) en butée dans le sens anti-horaire.
- Raccorder un voltmètre cc entre les bornes 3 et 6 de 1/38IC9 (coordonnées 4E) et régler 1/38R196 (coordonnées 5E) pour obtenir 0,6V.
- Raccorder un voltmètre cc à la borne 3 de 1/38IC9 (coordonnées 4E) et régler 1/38R204 (coordonnées 3F) pour obtenir 6,3V.
- Remédier aux court-circuits affectant 1/38R100 et 1/38L13.

Porteuse vidéo 38,9 MHz

Ne régler qu'en cas de remplacement de 1/38IC3.
- Raccorder un oscilloscope à la borne 8 1/38IC3 (coordonnées 3C).
- Régler 1/38L11 (coordonnées 3C) pour obtenir une horizontalité maximale du flanc de montée de l'impulsion de synchronisation ligne.

Arrêt syntonisation

Ne régler qu'en cas de remplacement de 1/38IC12.
- Eliminer le signal d'antenne du sélecteur de canaux.
- Raccorder un compteur de fréquences à la borne 5 de 1/38IC12 (coordonnées 2A).
- Régler 1/38R99 (coordonnées 2A) pour mesurer 15625 Hz.

CAG

Ne régler qu'en cas de remplacement de 1/38IC3.
- Appliquer un signal d'antenne B/G ou I.
- Tourner 1/38R56 (coordonnées 4D) en butée dans le sens horaire. Tourner ensuite dans le sens antihoraire pour obtenir une image sans parasites.

Sortie vidéo

- Raccorder un oscilloscope à l'émetteur de 1/38TR17 (coordonnées 2C).
- Régler 1/38R167 (coordonnées 2C) pour mesurer 2 V crête à crête.

Mélangeur "son"

Ne régler qu'en cas de remplacement de 1/38IC3.
- Raccorder un oscilloscope à la borne 5 de 1/38IC3 (coordonnées 3C) (x = 1 µS).
- Régler 1/38L9 (coordonnées 3C) pour obtenir un parallélisme optimal entre la crête et le creux du signal.

Séparation des voies

- Appliquer un signal d'antenne présentant une modulation sonore stéréo A2.
- Raccorder un oscilloscope à la borne 14 de 1/38IC2 (coordonnées 1C).
- Régler 1/38R17 (coordonnées 1C) pour obtenir une diaphonie minimale.

Décodeur 47 Picture-in-Picture
Osc réf. PLL

- Raccorder une mire PAL (barres de couleurs).
- Court-circuiter 47J1 et 47J2 (coordonnées 4A).
- Régler 47C77 (coordonnées 3B) pour obtenir un défilement minimal des couleurs de la barre.

Il convient également de régler 47C75 en présence d'une FI PAL/NTSC B/G/M.
- Régler 47C75 (coordonnées 4B) à l'image de 47C77. Le téléviseur doit toutefois être raccordé à une mire NTSC M.

Filtre en cloche

- Raccorder une mire SECAM (barres de couleurs).
- Régler 47L5 (coordonnées 3B) pour obtenir une transition optimale dans la barres de couleurs.

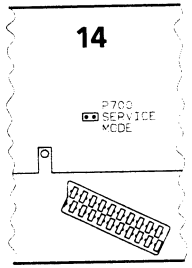
Niveau du noir SECAM

- Raccorder une mire couleurs SECAM présentant une composante noire.
- Raccorder un oscilloscope à la borne 1 de 47IC4.
- Régler 47R105 (coordonnées 3A) pour que le niveau cc du signal soit identique à celui de la valeur de suppression (niveau du noir).
- Raccorder un oscilloscope à la borne 3 de 47IC4.
- Régler 47L6 (coordonnées 4A) pour que le niveau cc du signal soit identique à celui de la valeur de suppression (niveau du noir).
- Répéter le réglage.

CONSEILS DE REPARATION

Mode de Maintenance

Amener le téléviseur en MODE DE MAINTENANCE :
- Déposer la face arrière.
- Appuyer sur la touche [TV].
- Court-circuiter brièvement la fiche «MODE DE MAINTENANCE» P700 située sur la carte PCB14.



Ce mode permet de régler l'image et la géométrie, voir paragraphe REGLAGES DE MAINTENANCE, BEOLINK 1000.

Lecture du type et du numéro de série de l'appareil

3340	00000001	Last error no
Type	Numéro de série	Dernière anomalie

Tube cathodique

Le téléviseur peut mettre en oeuvre 2 modèles de tubes cathodiques : un Philips et un Videocolour.
Le temps de coupure de l'image lors de la mise en marche est différent selon le modèle retenu.
Le modèle Philips demande 7 à 8 secondes, le modèle Videocolour 11 à 12 secondes.

Le temps (7 à 8 ou 11 à 12 secondes) se sélectionne au niveau du MODE DE MAINTENANCE.
- Sélectionner Rdr en MODE DE MAINTENANCE en utilisant les touches [<<] ou [>>].
- Appuyer sur [8] pour la fonction 7 à 8 secondes (Philips).
- Appuyer sur [9] pour la fonction 11 à 12 secondes (Videocolour).

Le téléviseur quitte le MODE DE MAINTENANCE et accuse ainsi réception de l'ordre.

Dernière anomalie

Permet de connaître la dernière anomalie éventuelle.

Le téléviseur est doté d'une série de circuits de protection qui deviennent actifs si une anomalie affecte l'appareil. Ils protègent l'appareil contre les dommages qui peuvent apparaître.

Le contrôle porte sur les trois types d'anomalies suivantes.

- Défaillance secteur (p. ex. surcharge d'une tension d'alimentation).
- Anomalie du bus I^{2}C.
- Anomalie de la mémoire EEPROM.

Lecture

Last error no = absence d'anomalie
Last error pf = défaillance secteur
Last error 00 jusqu'à FF compris = anomalie affectant le bus I^2C.
Last error df = erreur données (défaut éventuel de 6IC6 et de son EEPROM).

Le circuit «Power fail» est un circuit bouclé qui détecte la surcharge éventuelle d'une ou plusieurs stabilisations de tension. Le phénomène est enregistré par le microcalculateur qui commute l'appareil en mode «veille».

Le principe de fonctionnement du circuit est le suivant :
la borne 10 du microcalculateur 6IC2 envoie une tension pulsée.
La borne 12 du microcalculateur 6IC4 reçoit ce signal en l'absence d'anomalies.
En présence d'une surcharge, le circuit d'alimentation surchargé atténue le signal qui ne retourne donc pas à la borne 12.
Ce signal pilote également la mise en circuit du bloc d'alimentation via les cellules 4C62, 4R84 et 4TR19.

Le bloc d'alimentation commute automatiquement en mode «veille» si une anomalie apparait et empêche l'application de la tension pulsée.

Lors de la mise en circuit, le circuit «power fail» ignore durant 400ms le signal de réaction pour permettre aux diverses stabilisations de tension d'effectuer la régulation. Durant ce laps de temps, il est possible par exemple de localiser la sollicitation de la tension pulsée dans le système «power fail» (se reporter au schéma «power fail», page 2-4).

Le système détectant les anomalies dans le bus I^2C est la composante du logiciel qui enregistre les erreurs de communication entre le microcalculateur et les composants pilotés par ce bus.
Si une telle anomalie apparaît, le microcalculateur commute l'appareil en mode «veille».

Le microcalculateur remplace les données manquantes par les valeurs standard stockées dans la mémoire du programme si une anomalie affecte l'EEPROM (6IC6) et qu'il est impossible de transmettre les réglages fondamentaux de l'appareil aux composantes «déviation» et «couleur».

Mise en circuit en ignorant l'anomalie :
En mode «power fail» ou en présence d'une anomalie du bus I^2C se traduisant par une commutation du téléviseur en mode "veille" lors de chaque tentative de démarrage, il est possible de mettre le téléviseur en circuit et d'ignorer l'anomalie.

La procédure est la suivante :
- Le téléviseur doit être en mode «veille».
- Court-circuiter la fiche MODE DE MAINTENANCE P700 de la carte PCB14. Le court-circuit doit être constant.
- L'anomalie est imputable à une défaillance secteur si la DEL veille/ MARCHE du téléviseur s'allume en orange. Si la DEL s'allume en rouge, nous sommes confrontés à une erreur «données» ou à une anomalie du bus I^2C.
- Appuyer sur la touche TV. La DEL s'allume alors en vert.
- Remédier au court-circuit de la fiche MODE DE MAINTENANCE. Le téléviseur démarre en MODE DE MAINTENANCE si cette option est possible.

⇨

Le téléviseur est donc en MODE DE MAINTENANCE mais les anomalies «power fail» et «bus I^2C» sont ignorées jusqu'à la prochaine commutation en mode «veille» du téléviseur.

ATTENTION ! Une mise en marche du téléviseur ignorant une anomalie «power fail» peut endommager sérieusement l'appareil (la DEL veille/ MARCHE s'allume en orange).

Anomalie du bus I^2C

Une telle anomalie signifie que la communication au niveau du bus est défaillante car le microcalculateur essayait de communiquer au niveau de cette adresse. Dans la majorité des cas, un tel phénomène matérialise la défectuosité du composant correspondant. Mais il est également envisageable que le défaut soit imputable à un autre composant qui à perturbé la communication effectuée au niveau de l'adresse répertoriée comme «last error».

Adresses en cas d'anomalie du bus I^2C :

Last error	
4E	1/38IC6, sélecteur de canaux et expanseur de porte FI.
84	1/38IC2, décodeur stéréo A2.
40	31IC7, décodeur stéréo NICAM.
42	39/41IC5, convertisseur N/A apparié aux fonctions CUT-OFF et DRIVE.
22	37IC2, contrôleur vidéotex.
8C	13IC2, contrôleur de déviation.
82	14IC1, contrôleur «son».
86	14IC9, sélecteur vidéo.

Il convient de corriger le message pour visualiser «Last error no» après avoir remédié au défaut signalé. Y procéder en appuyant sur ‹ ou › (▲ ou ▼).

Lecture de la version du logiciel :
Le téléviseur ne doit pas être en MODE DE MAINTENANCE.
Appuyer sur les touches :
TV MENU 0 0 PLAY ou
TV SHIFT TEXT 0 0 PLAY.

Recherche des pannes dans le circuit CAF

Une anomalie dans les circuits CAF des cartes PCB1/38 «Tuner & IF» se traduit généralement par une recherche de canal dans les parties supérieures ou inférieures de la plage de sélection, ou par l'impossibilité du téléviseur de capter la fréquence adéquate quand l'opérateur essaie de se caler sur une fréquence.

Les directives suivantes peuvent êtres suivies lors de la recherche des pannes :
- Raccorder un signal d'antenne.
- Court-circuiter 1/38R100 (coordonnées 5F).
- Court-circuiter 1/38L13 (coordonnées 3A). Le CAF est alors hors circuit.
- Appuyer sur GOTO XXX pour sélectionner une fréquence.
- Appuyer une nouvelle fois sur GOTO et vérifier que la fonction «FINE TUNE» est réglée sur la valeur moyenne.
- Raccorder un voltmètre cc à la borne 5 de 1/38IC9 (coordonnées 4E). La tension mesurée à la borne 5 doit être de 6 ±0,3 V. L'anomalie se situe au niveau de 1/38IC4 ou dans les composants voisins si la tension n'est pas correcte.
- Si une tension de 6 V est présente à la borne 5, raccorder un voltmètre cc à la borne 3 de 1/38IC9. La tension à cette borne doit être supérieure à 6 V.

⇨

- Raccorder un voltmètre cc à la borne 6 de 1/38IC9. La tension à cette borne doit être inférieure à 6 V.
- L'anomalie se situe au niveau de 1/38IC9, 1/38IC13 ou des composants environnants si les tensions relevées aux bornes 3 et 6 ne sont pas correctes.

Recherches des pannes dans l'alimentation «switch mode power supply»

Il est possible d'appliquer la procédure suivante en cas d'anomalie dans l'alimentation «switch mode power supply» de la carte PCB4, (power supply & deflection) où les composants TR1 et BUT 12 par exemple sont toujours exposés à une anomalie :

- Couper la tension secteur et déposer le châssis.
- Court-circuiter la jonction base-émetteur de TR7 (R26), fig. 1.
- Souder une résistance de 1 kΩ au point neutre de R24 et R25, fig. 1.
- Raccorder une résistance d'1kΩ à la cathode de D16.
- Souder un fil à l'anode de D10 et le raccorder à la borne négative de l'alimentation continue 5 V, fig. 1.
- Souder un fil à la cathode de D12, souder l'extrémité libre des deux résistances de 1kΩ sur le fil. Raccorder le fil à la borne positive de l'alimentation continue 5 V, fig. 1.
- Raccorder le point neutre de l'alimentation continue équilibrée ±5 V à J16 (masse), fig. 1, et mettre l'alimentation en circuit.
- Raccorder un oscilloscope aux points ①, ②, ③ et ④, fig. 1 et 2.
- L'alimentation «switch mode power supply» est correcte quand les impulsions relevées sont identiques aux images oscilloscopiques ①, ②, ③ et ④, fig. 1 et 2.

Fig. 1

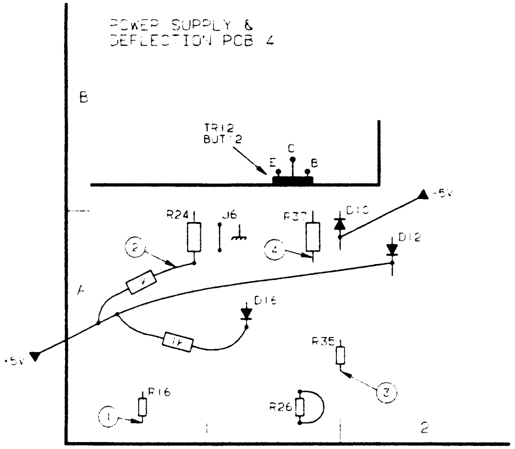
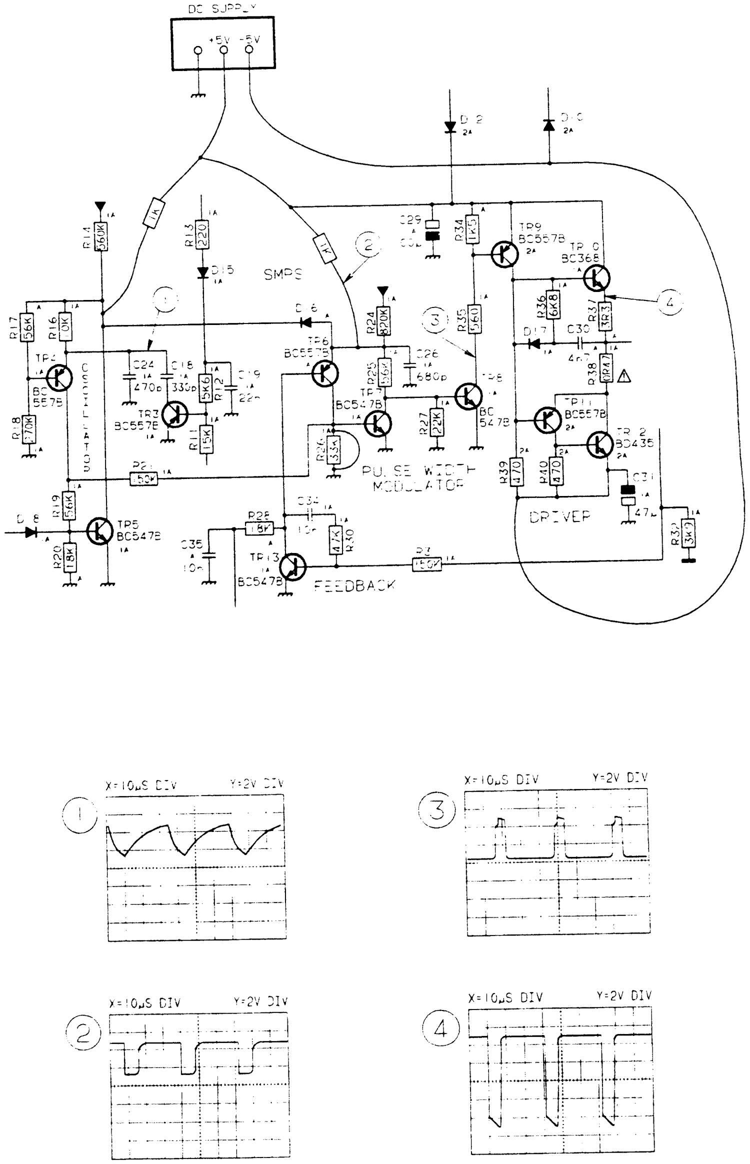
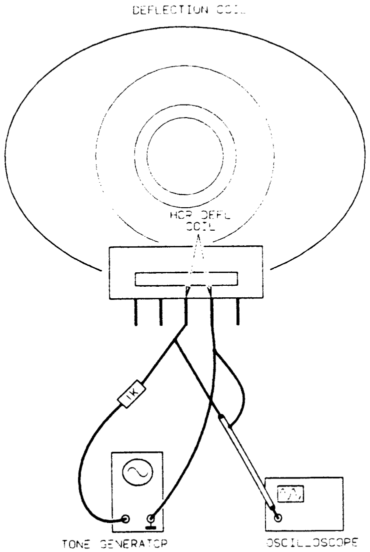

POWER SUPPLY &
DEFLECTION PCB 4
B
TR12
BUT12
C
E
B
-5V
R24
J6
R37
D10
D12
②
④
A
D16
1k
1k
+5V
R35
③
R16
①
R26
1
2

Fig. 2


DC SUPPLY
+5V
-5V
D12
D10
R14 560K
R13 220
D15
SMPS
1k
1k
②
①
D6
R17 56K
R16 10K
TR4 BC557B
R18 270K
C24 470p
C18 330p
R12 5K6
C19 22n
TR3 BC557B
R11 15K
OSCILLATOR
R21 150K
R19 56K
R20 18K
D8
TP5 BC547B
C35 10n
R28 1K8
C34 10p
R30 47K
TR13 BC547B
FEEDBACK
TR6 BC557B
R24 820K
R25 5K6
C26 680p
TR7 BC547B
R26 33K
R27 22K
TR8 BC547B
③
PULSE WIDTH MODULATOR
C29
R34 1K5
R35 5K6
TR9 BC557B
TR10 BC368
R36 6K8
R37 3R3
④
D17
C30 4n7
R38
TR11 BC557B
TR12 BD435
R39 470
R40 470
C31 47µ
DRIVER
R32 3K9
R31 150K
X=10µS DIV
Y=2V DIV
①
②
③
④

Mode de recherche des pannes de la déviation horizontale

- Le téléviseur ne doit pas être raccordé au secteur.
- Raccorder un oscillateur basse fréquence à la bobine de déviation horizontale au travers d'une résistance de 1 kΩ. L'oscillateur doit délivrer un signal sinusoïdal d'env. 43 kHz, 100 mVeff.
- Raccorder un oscilloscope à la bobine de déviation horizontale.



- En modifiant la fréquence de l'oscillateur basse fréquence, vérifier que la fréquence de résonance est de 43 ±2 kHz.
- La panne peut être imputable à un court-circuitage du transformateur THT 4T1 ou de la bobine de déviation hoizontale, voire à une interruption de la cellule 4C102, en présence de fréquences de résonance comprises dans la plage allant de 60 à 90 kHz.

Séparation du circuit est/ouest et déviation horizontale

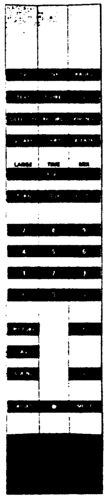
- En présence d'une image large et déformée : interrompre la liaison allant de la borne 1 de 4L8 à la sortie est/ouest (drain de 4TR35 et anode de 4D77). Le modulateur composé de diodes est en bon état si l'image se réduit et présente une distorsion en coussins.
- Si l'image est étroite et déformée, interrompre la liaison allant de la borne 1 de 4L8 à la sortie est/ouest et court-circuiter la borne 1 de 4L8 à la masse. Le modulateur composé de diodes est en bon état si ces interventions se traduisent par une image large et une déformation en coussins.

Coupure automatique

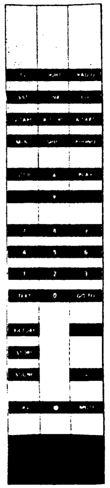
Le circuit de coupure automatique compense directement les différences qui apparaissent entre les points de coupure des trois canons à électrons lors de la durée de vie du tube cathodique.

Le réglage de la coupure automatique fait intervenir 39/41IC4, plusieurs composants de la sortie vidéo et le tube cathodique (signaux de réaction R, V et B).
Le niveau cc du signal à la sortie correspondante (borne 1, 3 ou 5) de 39/41IC4 est croissant si un des trois canons à électrons exige une modulation plus importante.

Beolink 1000 MK II



Beolink 1000 MK III



Fonctions OPTIONS & SHIFT
OPTIONS

La programmation du téléviseur peut mettre en oeuvre différentes options.

Option 0 = Coupure du récepteur IR du téléviseur.

Option 1 = Localisation des systèmes audio et vidéo (système Beolink) dans la même pièce.

Option 2 = Localisation des systèmes audio et vidéo (système Beolink) dans des pièces différentes.

Option 5 = Maître (le téléviseur réagit aux codes de données IR et aux codes datalink AUX).

Option 6 = Esclave (le téléviseur ne réagit qu'aux seuls codes de données IR).

Option 7 = Autoconfiguration. Le téléviseur commute automatiquement en option 7 = option 6, esclave, s'il est en option 5 et qu'il est couplé à un MCL 2AV. Le téléviseur conserve l'option 6 si le MCL 2AV est débranché du téléviseur. Les options 1 et 2 n'exercent aucune influence sur l'autoconfiguration.

⇨

Exemple de programmation :
Appuyer sur
● PICTURE 1 STORE
PICTURE 5 STORE = option 1 et 5.

La DEL de veille clignote une fois en appuyant sur STORE. Ce phénomène traduit la bonne réception de l'ordre.

Il est impératif de toujours mettre en oeuvre les options 1 et 2 avec les options 5 ou 6. Le téléviseur est programmé en usine sur les options 1 et 5.

Fonctions SHIFT

Appuyer sur
GOTO SHIFT 3 = Commutation entre les normes BG et L.

Appuyer sur
SHIFT 7 = Analyse non entrelacée.

Appuyer sur
SHIFT 9 = Sélection de l'entrée S-VHS.
Ces fonctions SHIFT sont du type bascule.

Fonction SHIFT 2 :

La fonction SHIFT 2 permet de verrouiller le téléviseur sur le programme sélectionné pour procéder à un enregistrement sur un magnétoscope à communication unidirectionnelle de données. La description de la commande prend pour référence le Beolink 1000 MK III.

1. Raccordement d'un magnétoscope :
   Sélectionner la fonction, TV ou SAT, appuyer sur RECORD RECORD SHIFT 2. Cette séquence verrouille le téléviseur sur le programme sélectionné.
   Pour déverrouiller la voie du signal, appuyer sur TV ou sur SAT SHIFT 2.
2. Raccordement de deux magnétoscopes (VTR1 et VTR2) :
   Il n'est pas possible de caler simultanément la voie du signal sur les deux magnétoscopes.

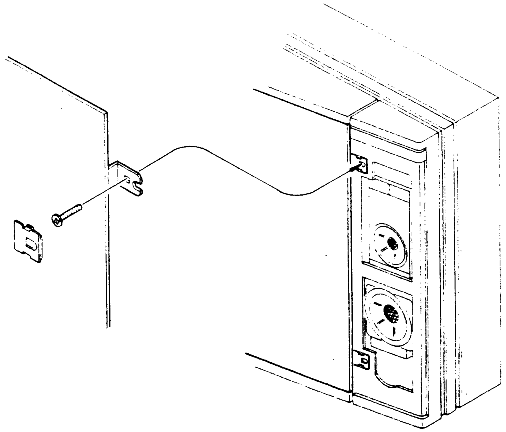
VTR1:
Sélectionner la fonction, TV ou SAT. Appuyer sur RECORD RECORD SHIFT 2. Cette séquence verrouille le téléviseur sur le programme à enregistrer sur VTR1.
Pour déverrouiller la voie du signal, appuyer sur V.TAPE TV ou sur SAT SHIFT 2.

VTR2:
Sélectionner la fonction, TV ou SAT. Appuyer sur SHIFT RECORD SHIFT RECORD SHIFT 2. Le téléviseur est alors verrouillé pour enregistrer sur VTR2.
Pour déverrouiller la voie du signal, appuyer sur SHIFT V.TAPE TV ou sur SAT SHIFT 2.

DISASSEMBLY
LX5000/6000
Contrast screen

ZERLEGUNG
LX 5000/6000
Kontrast-Filterscheibe

DESASSEMBLAGE
LX 5000/6000
Ecran à contraste



Remove frame with loudspeaker cloth by first pulling carfully from the bottom, then in the middle and finally from the top.

Remove the four caps, two in each side, using a small flat screw driver.

The screws which hold the screen are now accessible.

Remove the two bottom screws and *one* from the top.

Hold tightly on to the screen while removing the last screw.

Den Rahmen mit Lautsprecherstoff entfernen, dabei zunächst unten vorsichtig nach außen ziehen, danach in der Mitte und zuletzt oben.

Die vier Deckel, jeweils zwei auf jeder Seite, mit einem kleinen flachen Schraubenzieher abnehmen.

Die Schrauben, die den Schirm festhalten, sind jetzt zugänglich.

Die beiden Schrauben unten abnehmen, oben *nur* eine.

Bei der Entfernung der letzten Schraube den Schirm gut festhalten.

Déposer le châssis et les éléments des haut-parleurs en tirant doucement en bas, puis au milieu et enfin en haut.

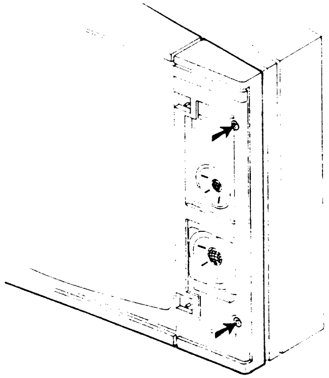
Enlever les quatre couvercles, deux de chaque côté, avec un petit tournevis plat.

Les vis qui maintiennent l'écran sont maintenant accessibles.

Dévisser les deux vis inférieures et *uniquement* une vis du haut.

Bien tenir l'écran lors du dévissage des vis.

Front frame (Access to IR receiver)



Remove the contrast screen.

Unscrew the two screws illustrated as well the two corresponding screws in the other side, and take of the front frame.

Blendrahmen (Zugang zu IR Sender/ Empfänger)

Abbau der Kontrast-Filterscheibe.

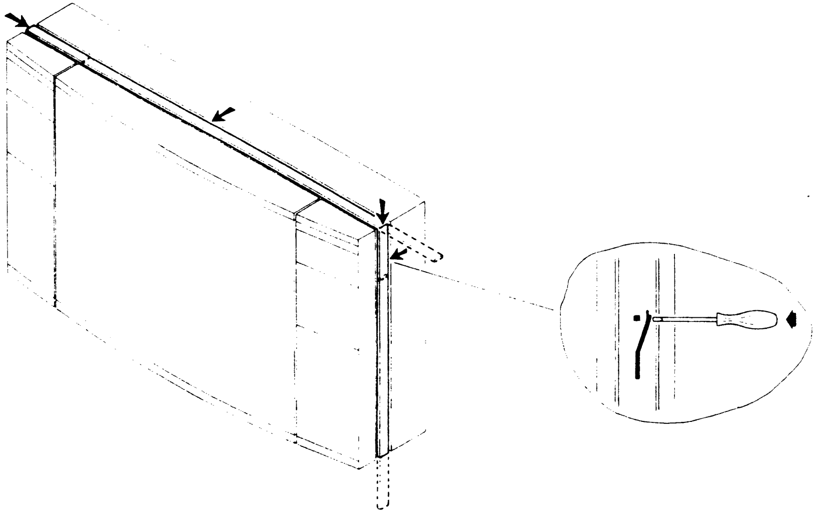
Die beiden abgebildeten Schrauben und die beiden entsprechenden Schrauben an der anderen Seite ausdrehen. Danach läßt sich der Blendrahmen abnehmen.

Châssis frontal (Accès à l'émetteur-récepteur IR)

Déposer écran à contraste.

Enlever les deux vis montrées ainsi que les deux vis correspondantes de l'autre côté. Il est possible de déposer le châssis frontal.

Top list/Side list



Loosen side lists by releasing lock using a small screwdriver.

Now the side list may be pushed down.

Loosen top list like the side lists.

Push top list towards the right.

Oberleiste / Seitenleiste

Durch Lösen der Verriegelung mit einem kleinen Schraubenzieher, die Seitenleisten lösen.

Nach der Lösung der Verriegelung, läßt sich die Seitenleiste nach unten schieben.

Die Oberleiste wie die Seitenleisten lösen.

Die Oberleiste nach rechts schieben.

Rebord supérieur / rebord latéral

Les rebords latéraux s'enlèvent en actionnant le verrou avec un tournevis, à lame étroite.

Il est possible de repousser le rebord latéral vers le bas après avoir actionné le verrou.

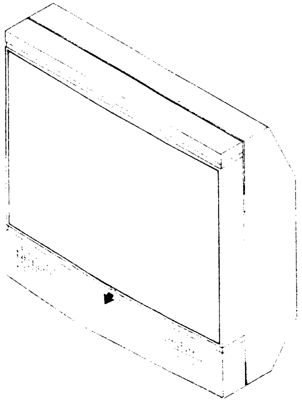
Le rebord supérieur se desserre comme les rebords latéraux.

Pousser le rebord supérieur vers la droite.

DISASSEMBLY
MX4000
Removal of contrast screen

ZERLEGUNG
MX4000
Abmontierung der Kontrastfilterscheibe

DESASSEMBLAGE
MX4000
Dépose de l'écran de contraste



Pull the lower edge of the contrast screen outwards.

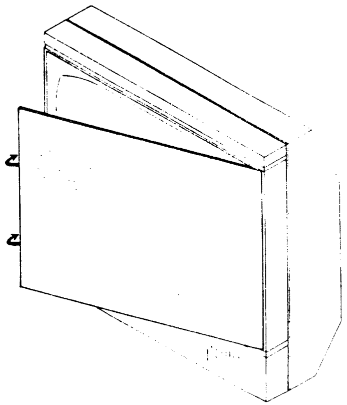
Die untere Kante der Kontrastfilterscheibe fassen und nach außen ziehen.

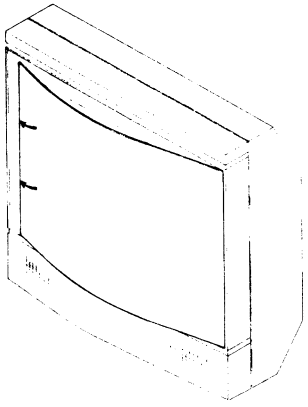
Tirer au niveau du rebord inférieur de l'écran de contraste.

Mounting of contrast screen

Montage der Kontrastfilterscheibe

Pose de l'écran de contraste





Fit the screen into the groove in one of the side panels.

Flex the screen slightly outwards and fit the screen into the groove in the opposite side panel.

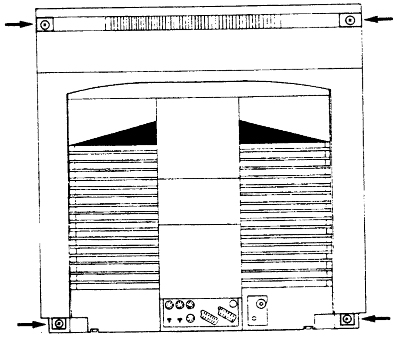
Die Kontrastfilterscheibe in der Rille einer der Seitenwände anbringen.
Die Kontrastfilterscheibe leicht nach außen wölben und anschließend in die Rille der gegenüberliegenden Seitenwand einsetzen.

Engager l'écran dans la rainure pratiquée dans un des panneaux latéraux.
Plier l'écran et l'engager dans la rainure pratiquée dans l'autre panneau latéral.

Rear part

Hinterseite

Face arrière



Loosen the 4 screws and then remove the rear part by pulling straight outwards.

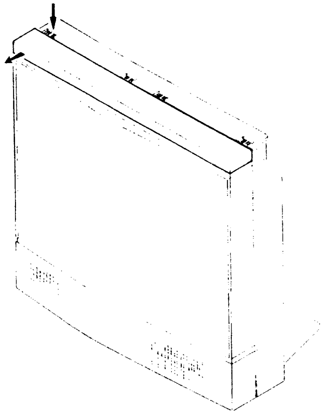
Die vier Schrauben lösen und die Hinterseite ganz gerade herausziehen.

Enlever les quatre vis et tirer la face arrière directement vers soi.

Top panel

Oberteil

Partie supérieure du coffret



Loosen the panel in one side by releasing the lock with a screwdriver.

The top panel can now be removed.

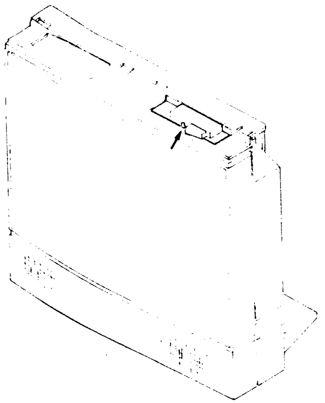
Das Oberteil durch Betätigung der Verriegelung mit Hilfe eines Schraubenziehers an einer Seite lösen.
Das Oberteil läßt sich nunmehr entfernen.

Détacher le coffret sur un côté en ouvrant le verrou avec un tournevis.
Il est alors possible de déposer la partie supérieure du coffret.

PCB 9 IR Transceiver

PCB 9 IR Sender/Empfänger

PCB 9 émetteur-récepteur IR



Release the lock and remove the PCB by lifting it at its front.

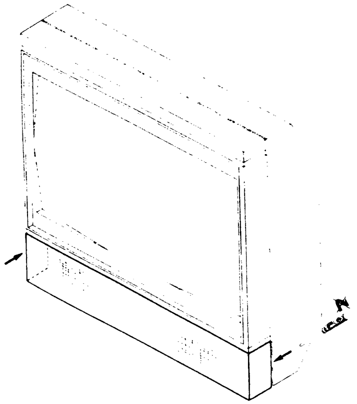
Die Verriegelung lösen und die PCB durch Anhebung an deren vorderen Kante herausnehmen.

Ouvrier le verrou et sortir la PCB en soulevant son rebord antérieur.

Loudspeaker panel

Lautsprecherverkleidung

Bloc haut-parleurs



Carefully insert a screwdriver between the loudspeaker panel and the cabinet in the right-hand side of the set.

Loosen the loudspeaker panel by exerting a light pressure with the screwdriver.
Push the loudspeaker panel towards the left.

A light push against the left corner of the loudspeaker panel will now release the panel completely.

An der rechten Seite des Fernsehgerätes vorsichtig einen Schraubenzieher zwischen die Lautsprecherverkleidung und das Gehäuse schieben.

Die Lautsprecherverkleidung mit einem leichten Druck des Schraubenziehers lösen und anschließend nach links schieben.

Mit einem leichten Druck gegen die linke Ecke der Lautsprecherverkleidung diese völlig lösen.

Engager avec précaution un tournevis entre le bloc haut-parleurs et le coffret sur le côté droit du téléviseur.

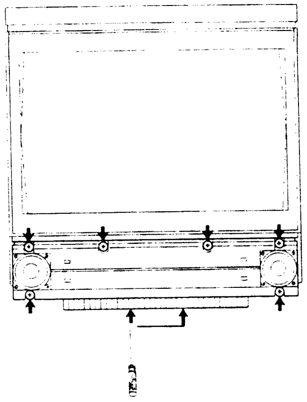
Enlever le bloc haut-parleurs en appliquant une légère pression sur le tournevis et en poussant vers la gauche.

Séparer complètement le bloc en appuyant légèrement sur le coin gauche du bloc haut-parleurs.

Loudspeaker baffle

Lautsprecherschallwand

Ecran acoustique HP



Remove the 6 screws.

Loosen the loudspeaker baffle by using a screwdriver to release the 2 locks at the base of the set.
Then pull the baffle outwards and upwards.

Die sechs Schrauben entfernen.

Die Lautsprecherschallwand durch Betätigung der beiden Verriegelungen am Boden des Gerätes lösen. Anschließend die Lautsprecherschallwand nach vorne und nach oben ziehen.

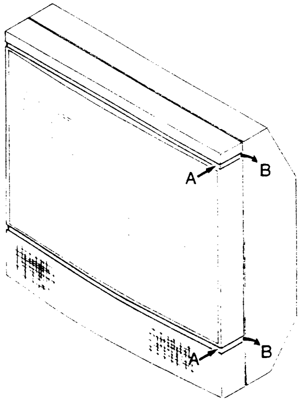
Enlever les six vis.

Libérer l'écran acoustique HP en ouvrant les deux verrous situés sur le dessous du téléviseur.
Tirer, puis soulever l'écran acoustique HP.

DISASSEMBLY
MX6000
Removal of contrast screen

ZERLEGUNG
MX6000
Abnehmen der Kontrastfilterscheibe

DESASSEMBLAGE
MX6000
Dépose de l'écran de contraste



Loosen the upper and lower plastic strips by firmly pressing the strips in one side (A) and simultaneously pulling at the end of the strips in the direction of the arrow B. The strips are now loose and can be removed.

Loosen the screw in each of the four corners. The contrast screen can now be removed.

Zum Entfernen der Zierleisten über und unter der Kontrastfilterscheibe die Leiste bei (A) andrücken und gleichzeitig ir Pfeilrichtung B herausziehen. Die Leisten können nun losgelöst werden.

In jeder der vier Ecken befindet sich eine Schraube, die gelöst werden muß. Danach ist die Kontrastfilterscheibe frei.

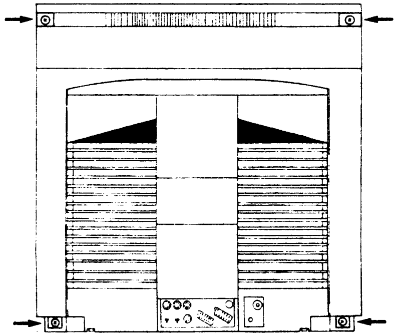
Enlever les bandeaux de décoration bordant les parties supérieure et inférieure de l'écran de contraste. Y procéder en les enfonçant (A) tout en tirant dans le sens de la flèche B. Il est alors possible d'enlever les bandeaux sur tout le pourtour.

Une vis est logée dans chacun des quatre coins. Les dévisser pour déposer l'écran de contraste.

Rear part

Hinterseite

Face arrière



Loosen the four screws and then remove the rear part by pulling straight outwards.

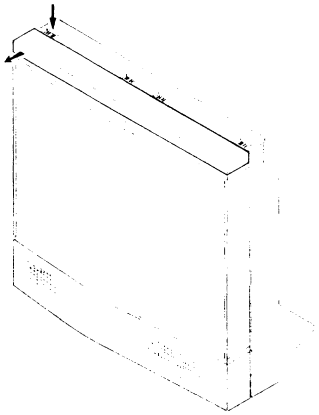
Die vier Schrauben lösen und die Hinterseite ganz gerade herausziehen.

Enlever les quatre vis et tirer la face arrière directement vers soi.

Top panel

Oberteil

Partie supérieure du coffret



Loosen the panel in one side by releasing the lock with a screwdriver.

The top panel can now be removed.

Das Oberteil durch Betätigung der Verriegelung mit Hilfe eines Schraubenziehers an einer Seite lösen.

Das Oberteil läßt sich nunmehr entfernen.

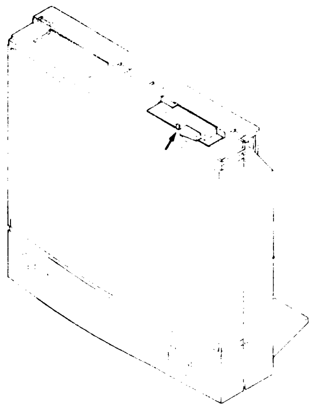
Détacher le coffret sur un côté en ouvrant le verrou avec un tournevis.

Il est alors possible de déposer la partie supérieure du coffret.

PCB 9 IR Transceiver

PCB 9 IR Sender/Empfänger

PCB 9 émetteur-récepteur IR



Release the lock and remove the PCB by lifting it at its front.

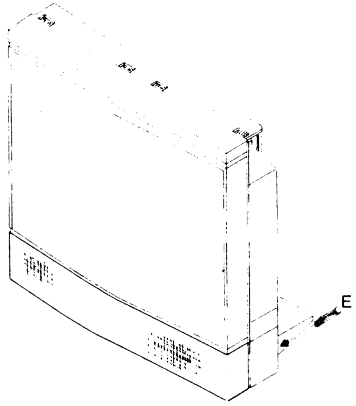
Die Verriegelung lösen und die PCB durch Anhebung an deren vorderen Kante herausnehmen.

Ouvrier le verrou et sortir la PCB en soulevant son rebord antérieur.

Loudspeaker panel

Lautsprecher-Frontbespannung

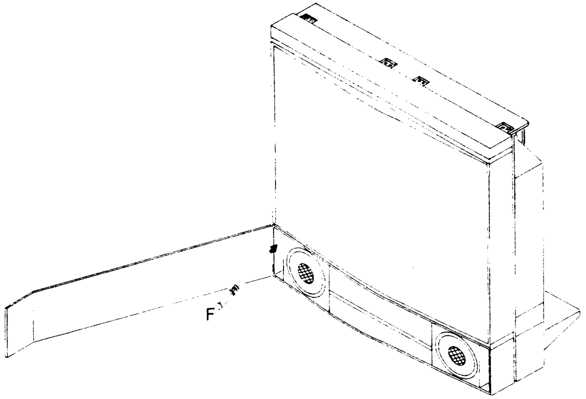
Bandeau recouvrant les haut-parleurs



Loosen the panel in the left-hand side (seen from behind) by inserting a screwdriver into the holes in the cabinet (E) to release the locks. Loosen the panel at the front of the set.

Die Frontbespannung an der linken Seite (Rückansicht) lockern, indem die Verriegelungen durch die Löcher im Gehäuse (E) hindurch mittels eines Schraubenziehers gelöst werden. Danach die Frontbespannung entlang der Kante losziehen.

Le bandeau se détache du côté gauche (vu de derrière) en débloquant les verrous à l'aide d'un tournevis engagé dans les orifices du coffret (E).
Tirer ensuite pour ouvrir le bandeau.



To detach the panel in the opposite side, release the locks by inserting a screwdriver between the panel and the cabinet (F).

Die Frontbespannung an der anderen Seite lösen, indem sie von vorne mittels eines Schraubenziehers entriegelt wird, der zwischen der Frontbespannung und dem Gehäuse (F) geschoben wird.

L'autre côté du bandeau se défait en ouvrant par devant les verrous en insérant un tournevis entre le bandeau et le coffret (F).

INSULATION TEST

Each set *must* be insulation tested after it has been dismantled. The test is to be carried out when the set has been re-assembled and is ready for delivery to the customer.

The insulation test is carried out in the following way:

Short-circuit the two plug pins of the main plug and connect one of the terminals of the insulation tester. Connect the other terminal of the insulation tester to the chassis pin of one of the loudspeaker sockets.

ISOLATIONSPRÜFUNG

Sämtliche geräte *sind* nach der Zerlegung *einer Isolationsprüfung zu unterziehen.* Diese Prüfung hat zu erfolgen, wenn das Gerät wieder vollständig zusammengebaut ist und an den Kunden ausgegeben werden kann.

Die Isolationsprüfung wird wie folgt durchgeführt:

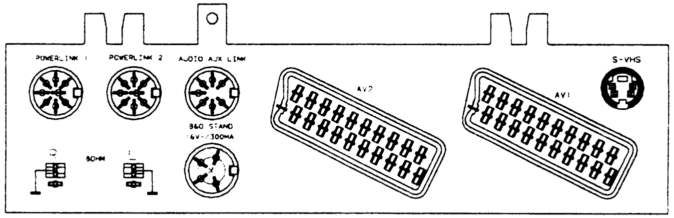
Die beiden Kontaktstifte des Netzsteckers werden kurzgeschlossen und daraufhin an eines der Terminale der Isolationstestgerätes angeschlossen.
Die andere Terminal wird an den Masseanschluß einer der Lautsprechersteckdosen angeschlossen.

ESSAI D'ISOLEMENT

Tous les appareils *doivent* subir un essai d'isolement après chaque démontage.
L'essai doit s'effectuer lorsque l'appareil est assemblé et prèt remis au client.

L'essai d'isolement s'effectue de la manière suivante:

Les deux broches, à la prise secteur, doivent être court-circuitées, puis connectées sur une des bornes de l'appareil d'essai d'isolement. L'autre borne de l'appareil d'essai d'isolement est couplée à la broche du potentiel de masse d'une des prises des hautparleurs.



NOTE!
To avoid damaging the set, it is essential that both insulator test terminals are in really good contact.

Now turn slowly the voltage control down on the insulation tester until a voltage of 1.5-2 kV is obtained. Hold it there for 1 sec, then turn slowly the voltage down again.

Flashovers are not permitted during the testing procedure.

WICHTIGER HINWEIS!
Zur Vermmeidung von Schäden am Gerät ist es wichtig, daß die beiden Terminale des Isolationstestgerätes einen wirklich einwandfreien Kontakt aufweisen.

Es wird jetzt langsam am Spannungsregler des Isolationstestgerätes gedreht, bis eine Spannung von 1,5 - 2 kV erreich wird. Diese Spannung ist 1 Sekunde lang zu halten, wonach der Spannungsregler wieder langsam zurückgedreht wird.

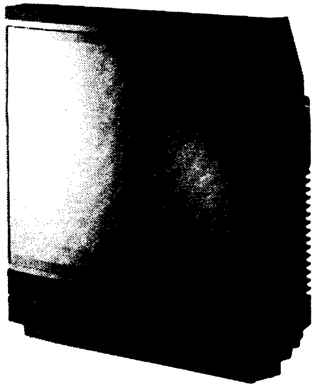
Es dürfen zu keinem Zeitpunkt während des Prüfvorgangs Überschläge vorkommen.

REMARQUE!
Pour éviter d'endommager l'appareil, il est imporant que les deux bornes de l'appareil d'essai d'isolement posseèdent un très bon contact.

Tourner lentement le règlage de la tension situé sur l'appareil d'essai d'isolement jusqu'à obtenir une tension de 1,5 - 2kV. Maintenir une seconde sur cette tension, puis diminuer de nouveau progressivement la tension.

Pendant la durée de l'assai, il ne faut, à aucun moment, qu'il se produise un amorçage.

Bang&Olufsen



Beovision MX 7000

Type 338X/3390

SERVICE MANUAL

10-92 3538821 Paste into Service Manual Beovision LX 5000/6000, MX 4000/6000, 3538812

Bang&Olufsen

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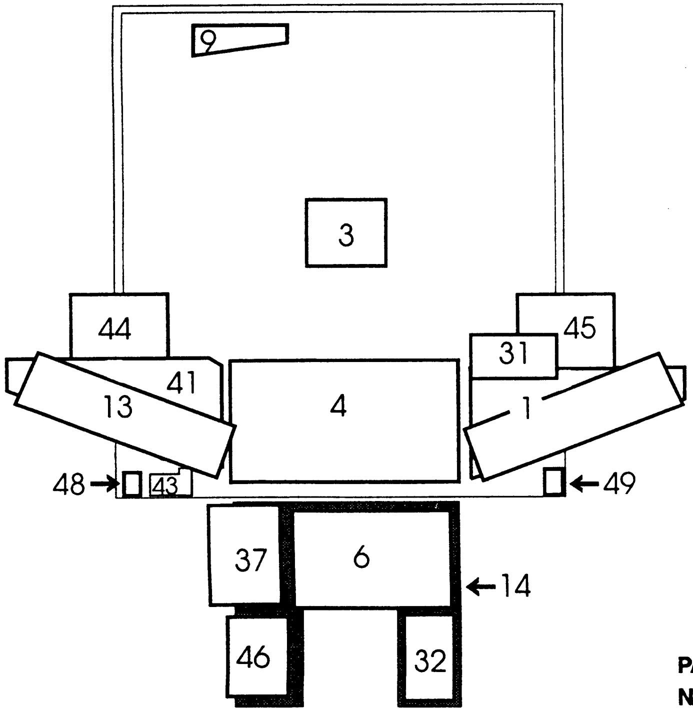

**PAL/SECAM,
NTSC BGL**

SURVEY OF MODULES

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4	Power Supply & Deflection	diagram I	page 9-6
6	Microcomputer 64K	diagram F-G	page 9-4, 5
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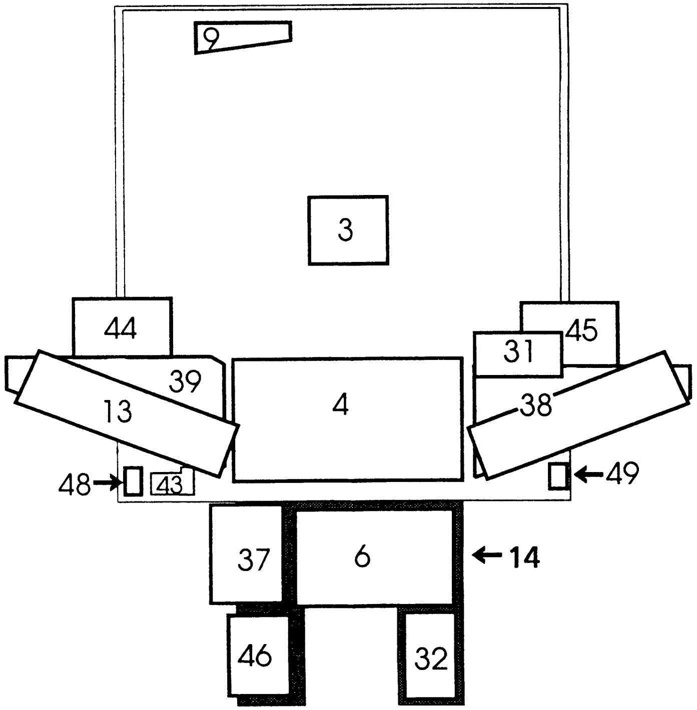


PAL I

TECHNICAL SPECIFICATIONS	**MX7000**
CTV system	* See type survey
Picture tube (Visual picture)	MX7000 70 cm - 28" (66 cm - 26")
Picture tube system	Flat square, Black Line, Black matrix,
	In-Line 110 degrees
Cabinets	MX: Red - White - Black - Blue - Grey
Operation	Beolink 1000, one-way
	Beolink 5000, two-way
	Beolink 7000, two-way
TV tuner range	46-855 MHz: VHF, S, Hyper, UHF channels
	*(System I 470-855 MHz: UHF channels)
No. of TV programmes	59 (+5 for local rooms)
Station identification	Station naming/program list
Satellite	*Prepared for Beosat LM
No. of satellite programmes	>99
Signal/noise level	>35 dB/1Vpp and antenna signal >1 mV
Crosstalk between sources	>45 dB/5 MHz
Teletext	FLOF, 6-alphabet
Teletext memory	4 x 59 page nos.
Sound system	*Nicam + A2 stereo decoder + A2 dual language
Speaker system	2 x Bass reflex, (MX 4000 2 x Log Line)
Sound pressure level	96 dB/DEC noise/3 m /stereo/room
Harmonic distortion	<0.25% at 15 watts
Signal/noise ratio	>50 dB weighted 50 mW (Nicam >70 dB)
Frequency range	30-20,000 Hz ±1.5 dB
Bass control	±8 dB/100 Hz
Treble control	±8 dB/10,000 Hz
Crossover principle	Active crossover network, 24 dB/octav
	Linkwitz/Riley
Crossover frequency	4000 Hz
Other data	
Mains voltage	230 volts, 50-60 Hz
Power consumption	95 (75-200) watts
Power consumption Stand-by	3.5 watts
Dimensions W x H x D/Weight	65 x 67.5 x 46.5 cm/40.3 kg

Other specifications see page 1-2

Subject to change without notice

8-3
TYPE SURVEY

*TYPE SURVEY

						Mounting modules for modification to other TV transmission systems				
MX7000	**System**	**Colour**	**Stereo**	**Remarks**		**PAL B/G/I**	**PAL/SECAM B/G/L/I[1]**	**PAL/SECAM B/G/D/K**	**PAL/SECAM B/G/L[1]**	**PAL/SECAM B/G NTSC M**
3380	B/G/L[1]	PAL/SECAM	A2		EU		3390452	3390453		8007997
3381	B/G/L[1]	PAL/SECAM	A2+NICAM		EU		3390452	3390453		8007997
3383	I	PAL	NICAM		GB	3390452 +8007449	3390452 +8007449 +8008062	3390453 +8007449 +8008062	8007449 +8008062	8007997 +8008062
3384	B/G/L[1]	PAL/SECAM	A2		Italy		3390452	3390453		8007997
3385	B/G/L[1]	PAL	A2		AUS	3390452 +8007449	3390452 +8007449 +8008062	3390453 +8007449 +8008062	8007449 +8008062	8007997 +8008062
3386	B/G/L[1]	PAL/SECAM	A2	SAT	EU		3390452	3390453		8007997
3387	B/G/L[1]	PAL/SECAM	A2+NICAM	SAT	EU		3390452	3390453		8007997
3388	B/G/L[1]	PAL/SECAM	A2+NICAM	SAT D2 MAC	EU		3390452	3390453		8007997
3389	I	PAL	NICAM	SAT	GB	3390452 +8007449	3390452 +8007449 +8008062	3390453 +8007449 +8008062	8007449 +8008062	8007997 +8008062
3390	I	PAL	NICAM	SAT D2 MAC	GB	3390452 +8007449	3390452 +8007449 +8008062	3390453 +8007449 +8008062	8007449 +8008062	8007997 +8008062
3392	B/G/L[1]	PAL/SECAM	A2	SAT	Italy		3390452	3390453		8007997

[1] System L: To receive VHF band 1 system L, the TV has to be fitted with a transposer part no. 1306125 (white) 1306126 (black).

8007449	Tuner & IF system B/G/L PCB.
3390452	Small bag with components to extend 8007449 to system I.
3390453	Small bag with components to modify 8007449 to system B/G/D/K.
8008062	PAL/SECAM/NTSC colour decoder PCB. TV's equiped with 8008062 (PAL/SECAM MODELS) are able to receive NTSC on AV.
8007997	Tuner & IF system B/G/M PCB.

WIRING DIAGRAM

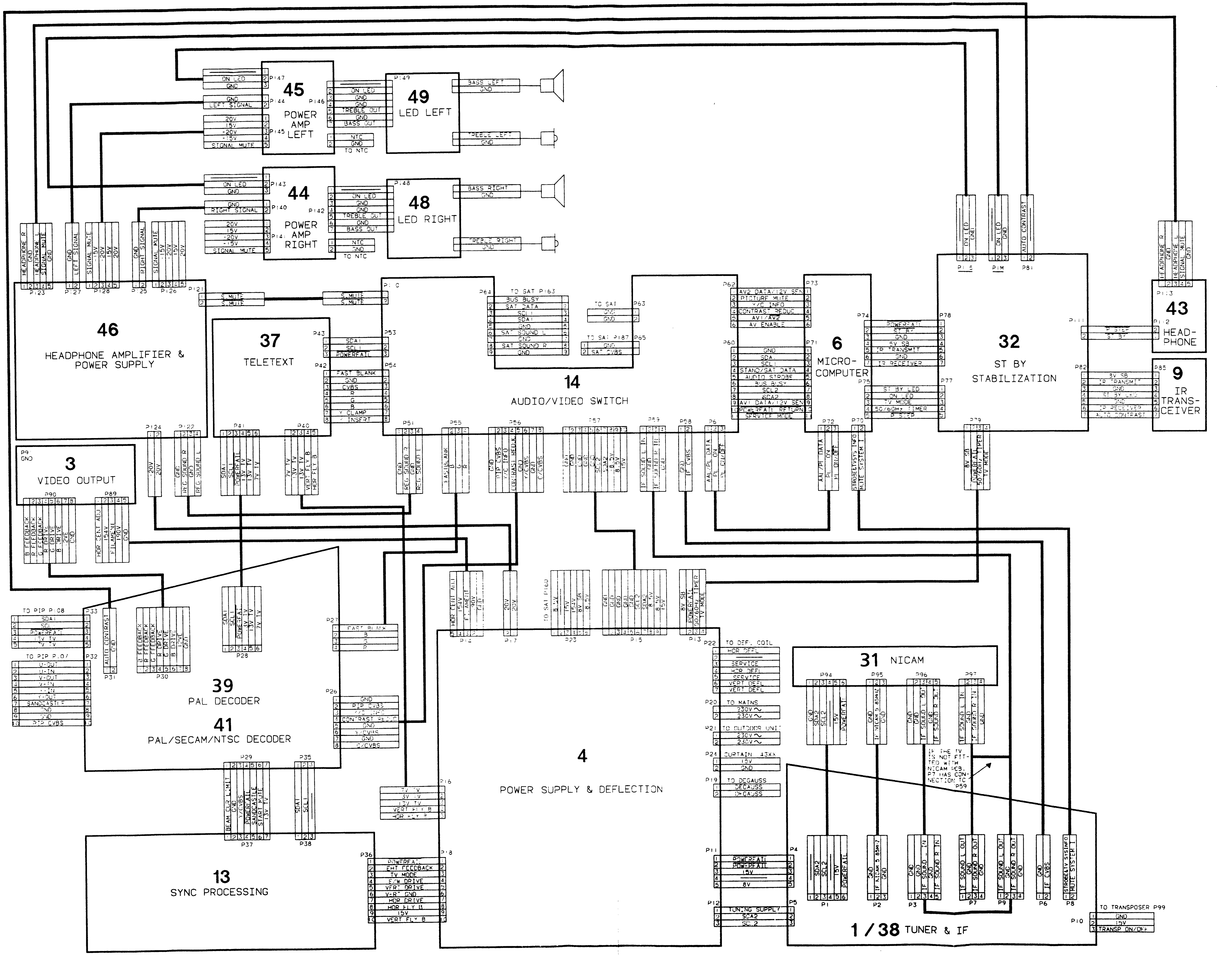
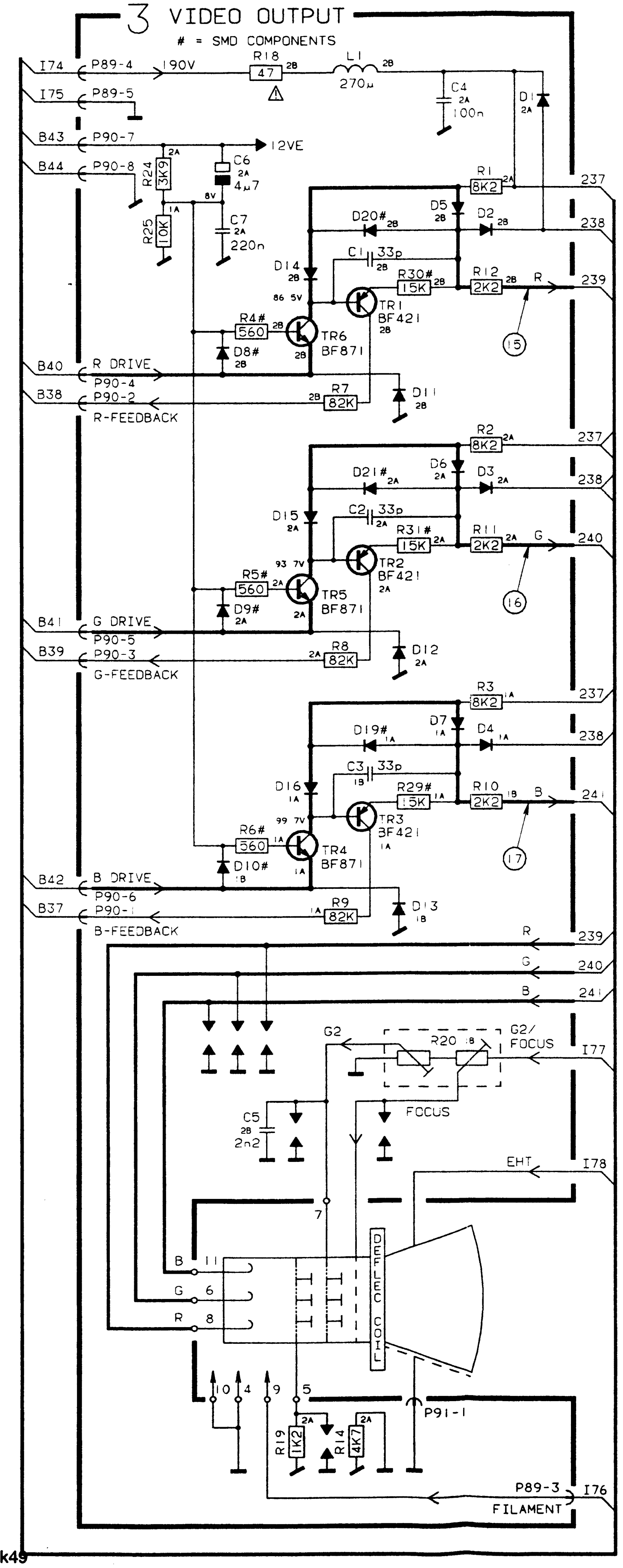
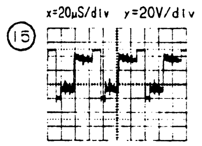
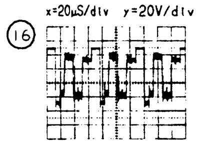

45 POWER AMP LEFT
49 LED LEFT
44 POWER AMP RIGHT
48 LED RIGHT
46 HEADPHONE AMPLIFIER & POWER SUPPLY
37 TELETEXT
14 AUDIO/VIDEO SWITCH
6 MICRO-COMPUTER
32 ST BY STABILIZATION
43 HEAD-PHONE
9 IR TRANS-CEIVER
3 VIDEO OUTPUT
39 PAL DECODER
41 PAL/SECAM/NTSC DECODER
13 SYNC PROCESSING
4 POWER SUPPLY & DEFLECTION
31 NICAM
1 / 38 TUNER & IF
BASS LEFT
TREBLE LEFT
BASS RIGHT
TREBLE RIGHT
TO PIP P108
TO PIP P107
TO DEFL. COIL
TO MAINS
TO OUTDOOR UNIT
CURTAIN 43XX
TO DEGAUSS
TO TRANSPOSER P99
IF THE TV IS NOT FITTED WITH NICAM PCB, P7 HAS CONNECTION TO P59

DIAGRAM C VIDEO OUTPUT


3 VIDEO OUTPUT
# = SMD COMPONENTS
I74
P89-4
190V
R18
47
L1
270µ
C4
100n
D1
I75
P89-5
B43
P90-7
12VE
B44
P90-8
R24
3K9
C6
4µ7
R25
10K
C7
220n
8V
R1
8K2
237
D20#
D5
D2
238
D14
C1
33p
R30#
15K
R12
2K2
R
239
TR1
BF421
R4#
560
TR6
BF871
D8#
B40
R DRIVE
P90-4
B38
P90-2
R-FEEDBACK
R7
82K
D11
15
R2
8K2
D21#
D6
D3
D15
C2
33p
R31#
15K
R11
2K2
G
240
TR2
BF421
R5#
560
TR5
BF871
D9#
B41
G DRIVE
P90-5
B39
P90-3
G-FEEDBACK
R8
82K
D12
16
R3
8K2
D19#
D7
D4
D16
C3
33p
R29#
15K
R10
2K2
B
241
TR3
BF421
R6#
560
TR4
BF871
D10#
B42
B DRIVE
P90-6
B37
P90-1
B-FEEDBACK
R9
82K
D13
17
G2
R20
G2/
FOCUS
I77
C5
2n2
FOCUS
EHT
I78
DEFLEC COIL
B 11
G 6
R 8
7
10
4
9
5
R19
1K2
R14
4K7
P91-1
P89-3
FILAMENT
I76

⑮


⑯


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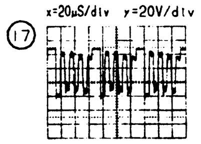
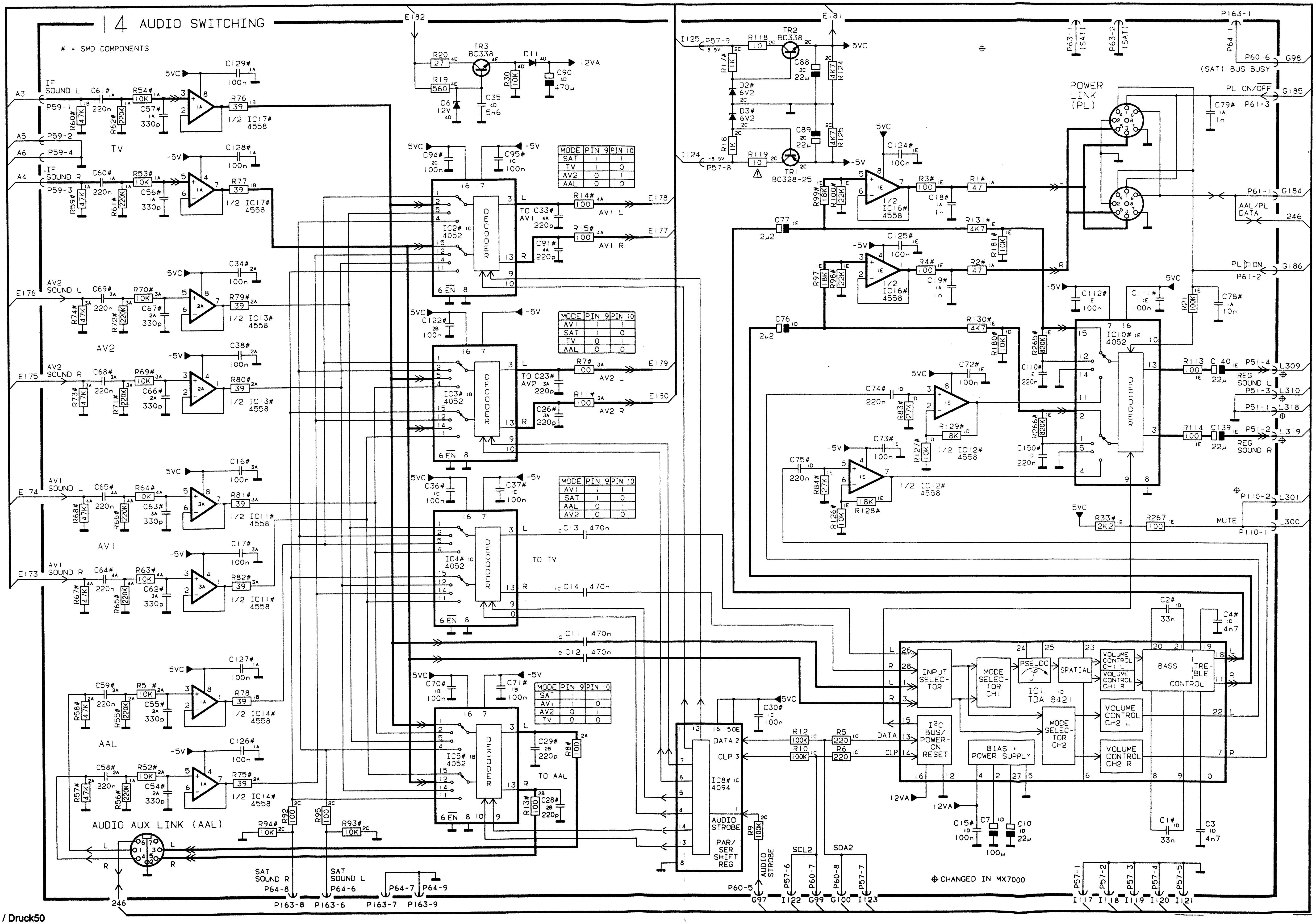


DIAGRAM D SOUND SWITCHING & CONTROL


14 AUDIO SWITCHING
# = SMD COMPONENTS
IF SOUND L
IF SOUND R
TV
AV2 SOUND L
AV2 SOUND R
AV2
AV1 SOUND L
AV1 SOUND R
AV1
AAL
AUDIO AUX LINK (AAL)
1/2 IC17# 4558
1/2 IC13# 4558
1/2 IC11# 4558
1/2 IC14# 4558
IC2# 4052
IC3# 4052
IC4# 4052
IC5# 4052
DECODER
TO C33# AV1
TO C23# AV2
AV1 L
AV1 R
AV2 L
AV2 R
TO TV
TO AAL
TR3 BC338
TR2 BC338
TR1 BC328-25
12VA
5VC
-5V
POWER LINK (PL)
(SAT) BUS BUSY
PL ON/OFF
AAL/PL DATA
PL ON
1/2 IC16# 4558
1/2 IC12# 4558
IC10# 4052
REG SOUND L
REG SOUND R
MUTE
IC8# 4094
DATA 2
CLP 3
AUDIO STROBE
PAR/SER SHIFT REG
SAT SOUND R
SAT SOUND L
SCL2
SDA2
IC1 TDA 8421
INPUT SELECTOR
MODE SELECTOR CH1
PSEUDO
SPATIAL
VOLUME CONTROL CH1 L
VOLUME CONTROL CH1 R
BASS TREBLE CONTROL
I2C BUS/POWER-ON RESET
BIAS + POWER SUPPLY
MODE SELECTOR CH2
VOLUME CONTROL CH2 L
VOLUME CONTROL CH2 R
DATA
CLP
⊕ CHANGED IN MX7000
E182
E181
E178
E177
E179
E130
E176
E175
E174
E173
A3
A5
A6
A4
P59-1
P59-2
P59-4
P59-3
P57-9
P57-8
I125
I124
P163-1
P163-8
P163-6
P163-7
P163-9
P64-8
P64-6
P64-7
P64-9
P60-5
P60-6
P61-1
P61-2
P61-3
P51-4
P51-3
P51-1
P51-2
P110-2
P110-1
G98
G185
G184
G186
G97
G99
G100
I122
I123
I117
I118
I119
I120
I121
L309
L310
L318
L319
L301
L300
246

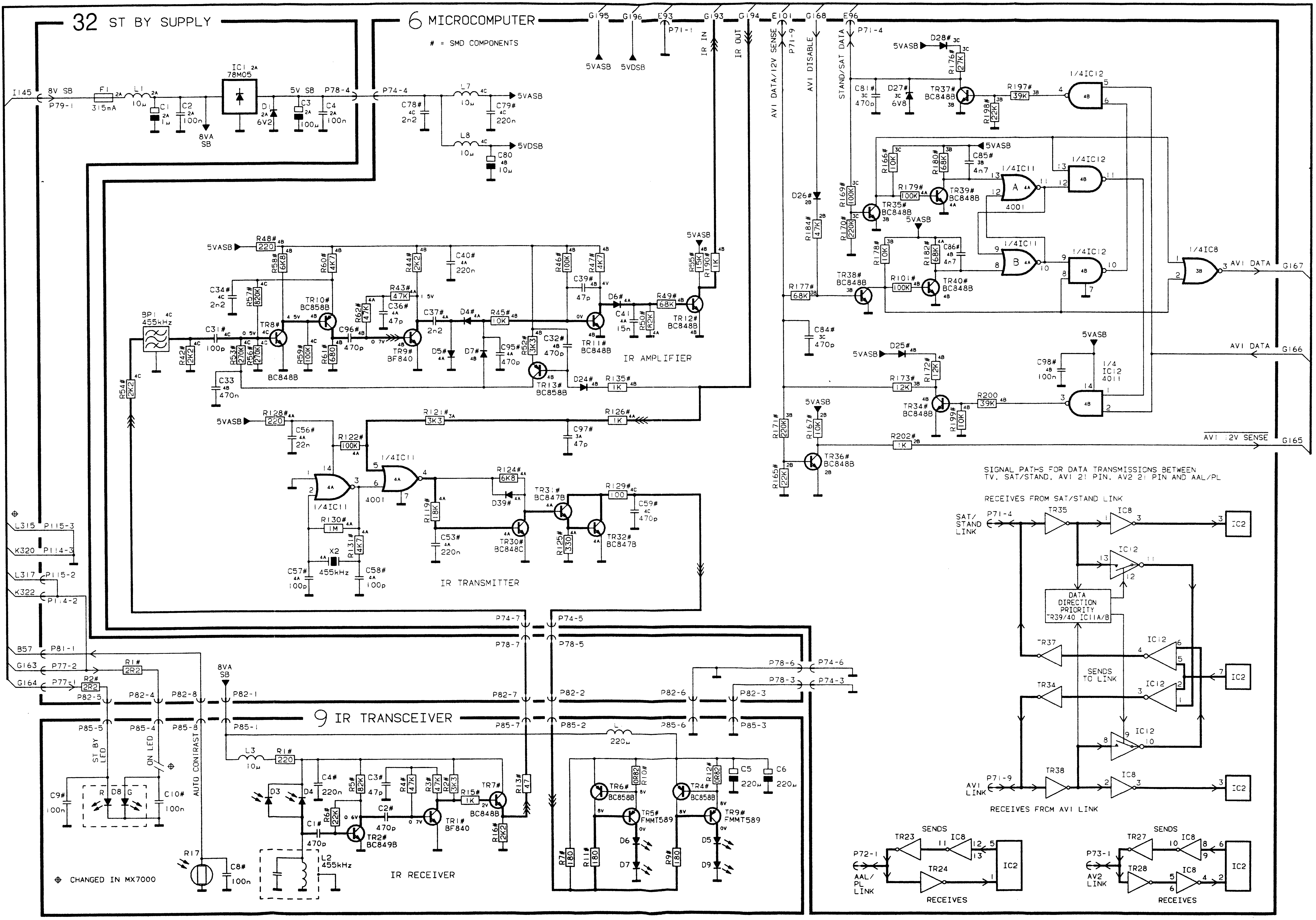
MODE	PIN 9	PIN 10
SAT	1	1
TV	1	0
AV2	0	1
AAL	0	0

MODE	PIN 9	PIN 10
AV1	1	1
SAT	1	0
TV	0	1
AAL	0	0

MODE	PIN 9	PIN 10
AV1	1	1
SAT	1	0
AAL	0	1
AV2	0	0

MODE	PIN 9	PIN 10
SAT	1	1
AV1	1	0
AV2	0	1
TV	0	0

DIAGRAM F IR TRANSCEIVER AND 5V ST BY SUPPLY


32 ST BY SUPPLY
6 MICROCOMPUTER
# = SMD COMPONENTS
9 IR TRANSCEIVER
I145
8V SB
P79-1
F1 315mA
L1 10µ
C1 1µ
C2 100n
8VA SB
IC1 78M05
D1 6V2
5V SB
C3 100µ
C4 100n
P78-4
P74-4
C78# 2n2
L7 10µ
C79# 220n
5VASB
L8 10µ
C80 10µ
5VDSB
G195
G196
E93
G193
G194
E101
G168
E96
P71-1
P71-9
P71-4
IR IN
IR OUT
AV1 DATA/12V SENSE
AV1 DISABLE
STAND/SAT DATA
D28#
R176# 27K
C81# 470p
D27# 6V8
TR37# BC848B
R197# 39K
R198# 22K
1/4IC12
R166# 10K
R180# 68K
C85# 4n7
1/4IC11
R179# 100K
TR39# BC848B
TR35# BC848B
R169# 100K
R170# 220K
4001
D26#
R184# 47K
R178# 10K
R182# 68K
C86# 4n7
TR38# BC848B
R177# 68K
R101# 100K
TR40# BC848B
1/4IC8
AV1 DATA
G167
G166
C84# 470p
D25#
R172# 12K
R173# 12K
TR34# BC848B
R199# 10K
R200 39K
C98# 100n
1/4 IC12 4011
R171# 220K
R167# 10K
R165# 22K
TR36# BC848B
R202# 1K
AV1 12V SENSE
G165
R48# 220
R58# 6K8
R60# 4K7
R44# 2K2
C40# 220n
R46# 100K
R47# 4K7
R55# 15K
R190# 1K
C34# 2n2
R57# 820K
TR10# BC858B
R43# 47K
C36# 47p
C39# 47p
D6#
C41 15n
R50# 82K
R49# 68K
TR12# BC848B
BP1 455kHz
C31# 100p
TR8# BC848B
R53# 270K
R56# 270K
R59# 100K
R61# 680
C96# 470p
R62# 47K
TR9# BF840
C37# 2n2
D4#
R45# 10K
D5#
D7#
C95# 470p
R52# 3K3
C32# 470p
TR13# BC858B
TR11# BC848B
IR AMPLIFIER
R42# 2K2
R54# 2K2
C33 470n
D24#
R135# 1K
R128# 220
C56# 22n
R122# 100K
R121# 3K3
R126# 1K
C97# 47p
1/4IC11
R124# 6K8
D39#
TR31# BC847B
R129# 100
C59# 470p
R119# 18K
TR30# BC848C
C53# 220n
R125# 330
TR32# BC847B
R130# 1M
R131# 4K7
X2 455kHz
C57# 100p
C58# 100p
IR TRANSMITTER
L315 P115-3
K320 P114-3
L317 P115-2
K322 P114-2
B57 P81-1
G163 P77-2
G164 P77-1
R1# 2R2
R2# 2R2
P74-7
P74-5
P78-7
P78-5
P78-6
P74-6
P78-3
P74-3
P82-5
P82-4
P82-8
P82-1
P82-7
P82-2
P82-6
P82-3
P85-5
P85-4
P85-8
P85-1
P85-7
P85-2
P85-6
P85-3
ST BY LED
ON LED
AUTO CONTRAST
C9# 100n
D8 R G
C10# 100n
R17
C8# 100n
⊕ CHANGED IN MX7000
L3 10µ
R1# 220
D3
D4
C4# 220n
R5# 82K
C3# 47p
R4# 47K
R3# 47K
R2# 3K3
TR7# BC848B
R15# 1K
R13# 47
C1# 470p
R6# 22K
TR2# BC849B
C2# 470p
TR1# BF840
R16# 2K2
L2 455kHz
IR RECEIVER
L 220µ
R10# 0R82
R12# 0R82
C5 220µ
C6 220µ
TR6# BC858B
TR4# BC858B
TR5# FMMT589
TR9# FMMT589
R7# 180
R11# 180
R9# 180
D6
D7
D5
D9
SIGNAL PATHS FOR DATA TRANSMISSIONS BETWEEN TV, SAT/STAND, AV1 21 PIN, AV2 21 PIN AND AAL/PL
RECEIVES FROM SAT/STAND LINK
SAT/STAND LINK
TR35
IC8
IC2
IC12
DATA DIRECTION PRIORITY TR39/40 IC11A/B
TR37
SENDS TO LINK
TR34
TR38
AV1 LINK
RECEIVES FROM AV1 LINK
SENDS
TR23
TR24
P72-1
AAL/PL LINK
RECEIVES
TR27
TR28
P73-1
AV2 LINK

]

DIAGRAM G MICROCOMPUTER

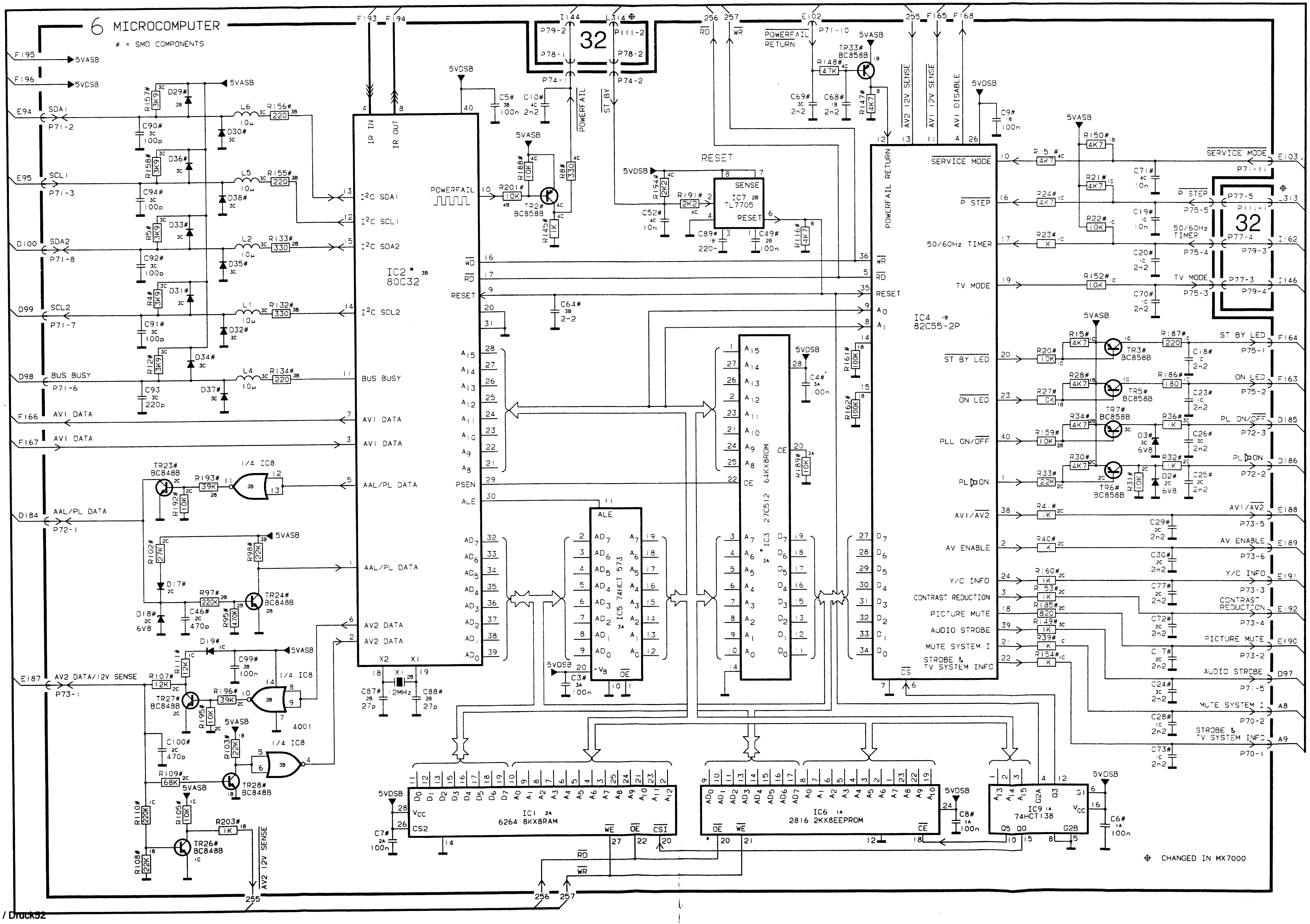

6 MICROCOMPUTER
# = SMD COMPONENTS
F195 5VASB
F196 5VDSB
E94 SDA1 P71-2
E95 SCL1 P71-3
D100 SDA2 P71-8
D99 SCL2 P71-7
D98 BUS BUSY P71-6
F166 AV1 DATA
F167 AV1 DATA
D184 AAL/PL DATA P72-1
E187 AV2 DATA/12V SENSE P73-1
IC2 80C32
I²C SDA1
I²C SCL1
I²C SDA2
I²C SCL2
BUS BUSY
AV1 DATA
AAL/PL DATA
AV2 DATA
IR IN
IR OUT
POWERFAIL
WD
RD
RESET
PSEN
ALE
X2 X1
12MHz
1/4 IC8
4001
TR23# BC848B
TR24# BC848B
TR27# BC848B
TR28# BC848B
TR26# BC848B
TR2# BC858B
AV2 12V SENSE
32
P79-2 P78-1 P111-2 P78-2 P74-1 P74-2
I144 L314 256 257 E102 255 F165 F168 F193 F194
ST BY
POWERFAIL RETURN P71-10
TP33# BC858B
RESET
IC7 TL7705
SENSE
IC5 74HCT573
IC3 27C512 64KX8ROM
IC4 82C55-2P
POWERFAIL RETURN
AV2 12V SENSE
AV1 12V SENSE
AV1 DISABLE
SERVICE MODE E103 P71-11
P STEP P75-5
50/60Hz TIMER P75-4
TV MODE P75-3
P77-5 P111-1 P77-4 P79-3 P77-3 P79-4
L313 I162 I146
ST BY LED F164 P75-1
ON LED F163 P75-2
PLL ON/OFF D185 P72-3
PL ON D186 P72-2
AV1/AV2 E188 P73-5
AV ENABLE E189 P73-6
Y/C INFO E191 P73-3
CONTRAST REDUCTION E192 P73-4
PICTURE MUTE E190 P73-2
AUDIO STROBE D97 P71-5
MUTE SYSTEM I A8 P70-2
STROBE & TV SYSTEM INFO A9 P70-1
TR3# BC858B
TR5# BC858B
TR7# BC858B
TR6# BC858B
IC1 6264 8KX8RAM
IC6 2816 2KX8EEPROM
IC9 74HCT138
WE OE CS1 CS2 CE
RD WR
5VASB 5VDSB
CHANGED IN MX7000

DIAGRAM I POWER SUPPLY & DEFLECTION

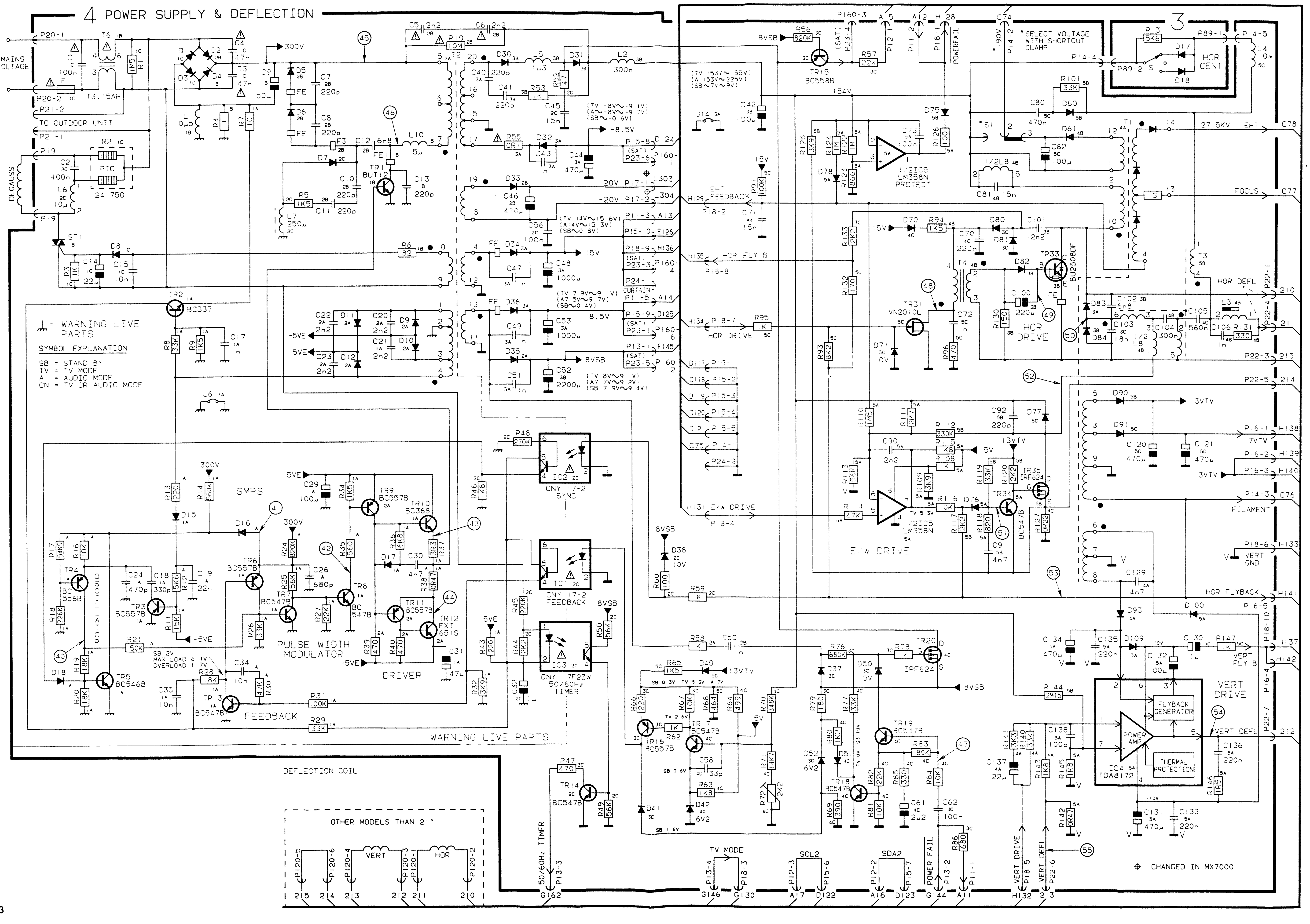

4 POWER SUPPLY & DEFLECTION
3
MAINS VOLTAGE
TO OUTDOOR UNIT
DEGAUSS
PTC
24-750
T3. 15AH
300V
-8.5V
15V
8.5V
8VSB
-5VE
5VE
20V
-20V
⊥ = WARNING LIVE PARTS
SYMBOL EXPLANATION
SB = STAND BY
TV = TV MODE
A = AUDIO MODE
CN = TV OR AUDIO MODE
SMPS
PULSE WIDTH MODULATOR
DRIVER
FEEDBACK
CNY 17-2 SYNC
CNY 17-2 FEEDBACK
CNY 17F2ZW 50/60Hz TIMER
WARNING LIVE PARTS
DEFLECTION COIL
OTHER MODELS THAN 21"
VERT
HOR
IC5 LM358N PROTECT
IC5 LM358N
E/W DRIVE
HOR DRIVE
EHT FEEDBACK
HOR FLY B
H131 E/W DRIVE
H134 P18-7 HOR DRIVE
POWERFAIL
SELECT VOLTAGE WITH SHORTCUT CLAMP
HOR CENT
27.5KV EHT
FOCUS
HOR DEFL
3VTV
7VTV
13VTV
FILAMENT
VERT GND
HOR FLYBACK
VERT FLY B
VERT DRIVE
FLYBACK GENERATOR
POWER AMP
THERMAL PROTECTION
IC4 TDA8172
VERT DEFL
TV MODE
SCL2
SDA2
POWER FAIL
50/60Hz TIMER
⊕ CHANGED IN MX7000
BUT12
BC337
BU2508DF
VN2010L
IRF624
BC558B
BC547B
BC557B
BC546B
BC556B
BC368
FXT651S

DIAGRAM K POWER AMPLIFER RIGHT

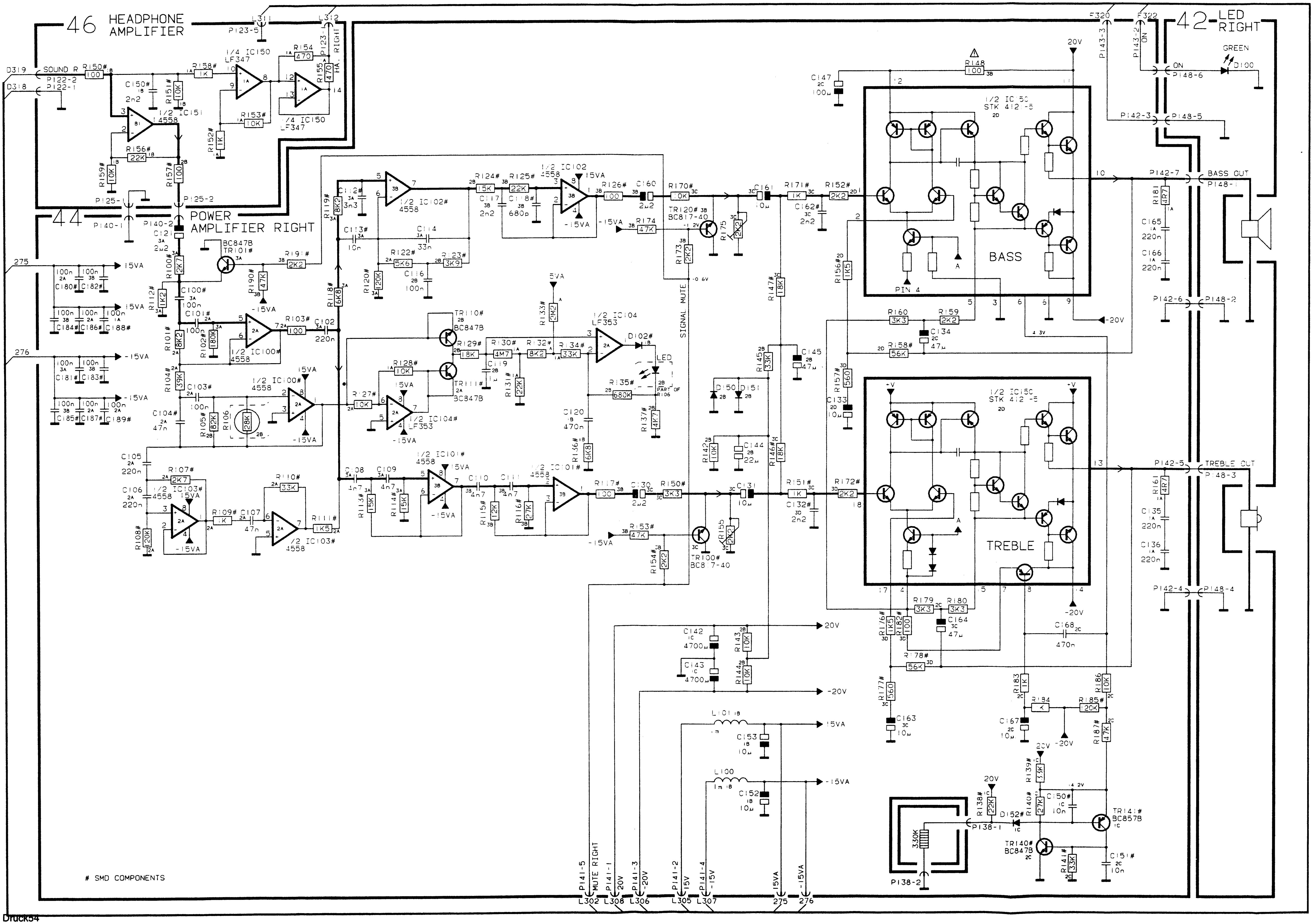
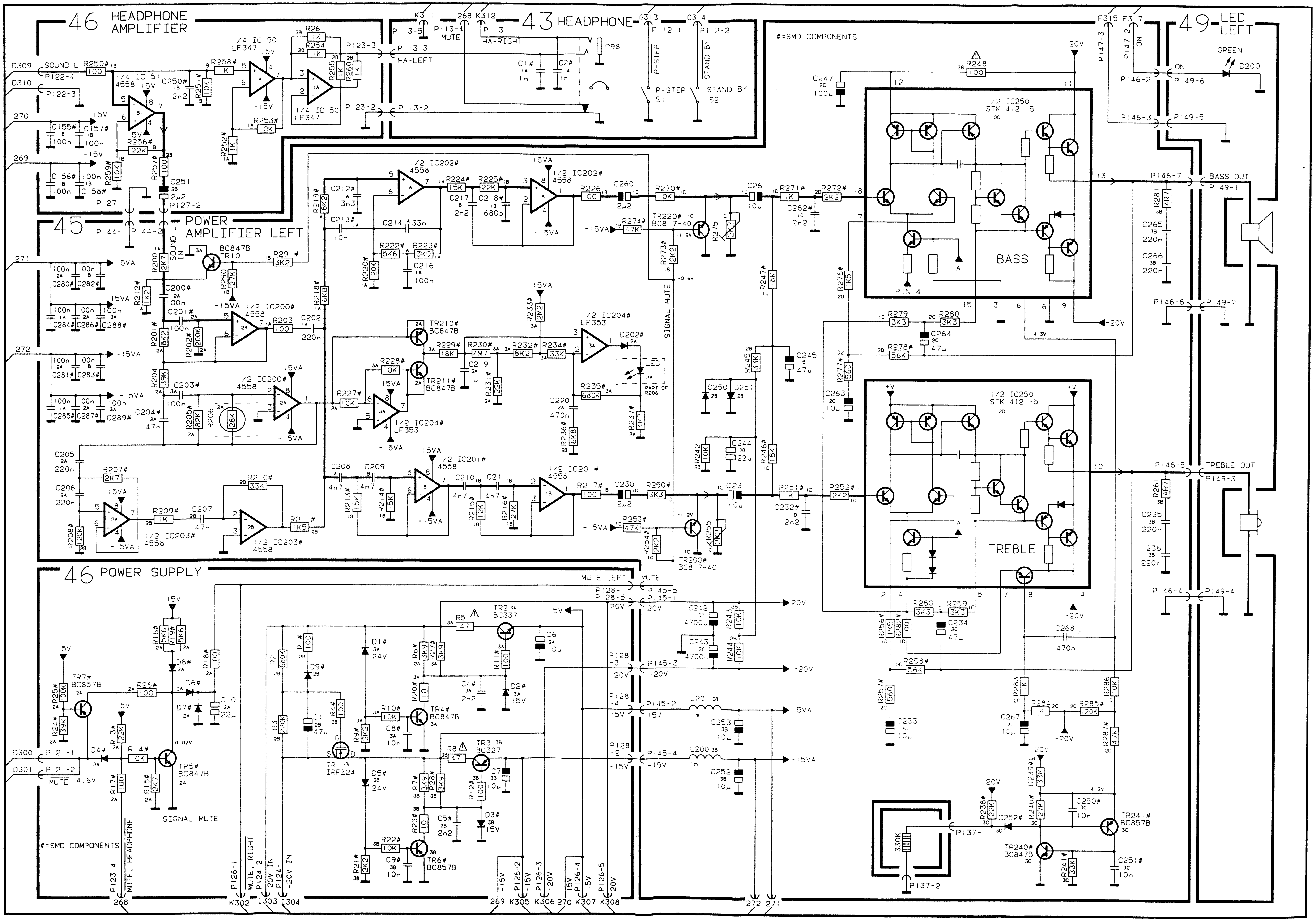
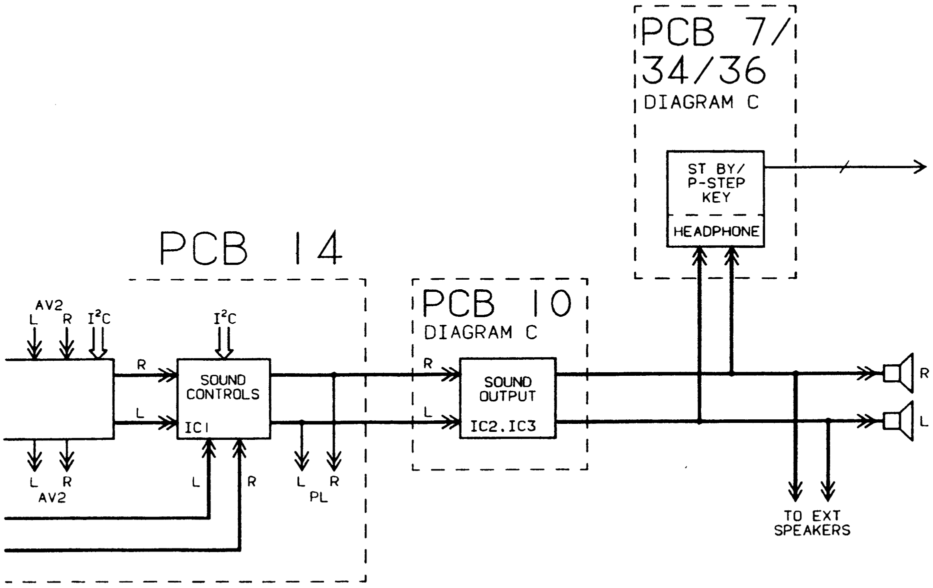
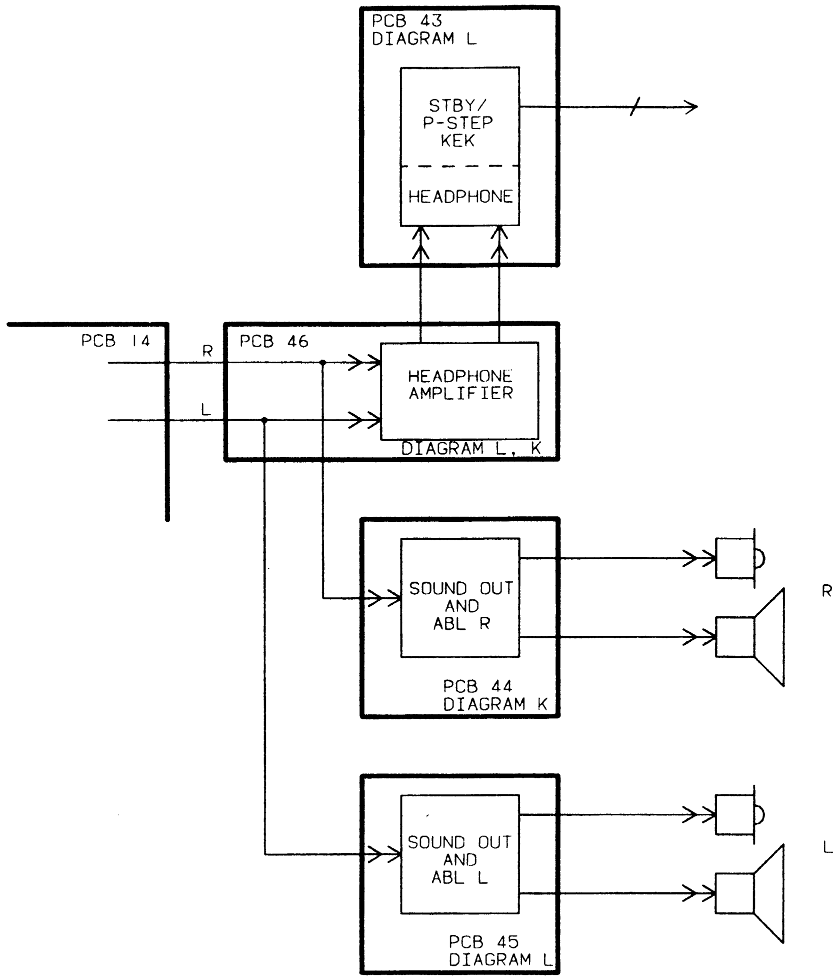

46 HEADPHONE AMPLIFIER
44 POWER AMPLIFIER RIGHT
42 LED RIGHT
GREEN
D100
SOUND R
D319
D318
P122-2
P122-1
L311
L312
P123-5
P123-1
HA. RIGHT
1/4 IC150 LF347
1/2 IC151 4558
P125-1
P125-2
P140-1
P140-2
275
276
15VA
-15VA
BC847B TR101#
1/2 IC100# 4558
1/2 IC102# 4558
1/2 IC102 4558
1/2 IC104 LF353
1/2 IC104# LF353
1/2 IC101# 4558
1/2 IC103# 4558
TR110# BC847B
TR111# BC847B
D102#
LED PART OF R106
TR120# BC817-40
TR100# BC817-40
SIGNAL MUTE
D150
D151
1/2 IC150 STK 412-5
BASS
TREBLE
PIN 4
P142-7
BASS OUT
P148-1
P142-5
TREBLE OUT
P148-3
P142-6
P148-2
P142-4
P148-4
P142-3
P148-5
P143-2
P143-3
P148-6
F320
F322
ON
20V
-20V
4.3V
L101
L100
C142 4700µ
C143 4700µ
P138-1
P138-2
330K
D152#
TR140# BC847B
TR141# BC857B
P141-5 MUTE RIGHT
P141-1 20V
P141-3 -20V
P141-2 15V
P141-4 -15V
L302
L308
L306
L305
L307
# SMD COMPONENTS

DIAGRAM L POWER AMPLIFER LEFT

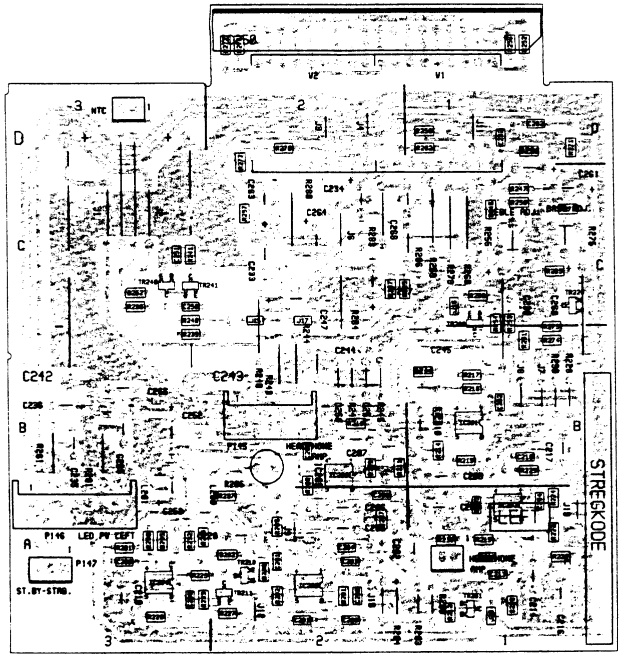

46 HEADPHONE AMPLIFIER
43 HEADPHONE
49 LED LEFT
45 POWER AMPLIFIER LEFT
46 POWER SUPPLY
#=SMD COMPONENTS
1/4 IC 50 LF347
1/4 IC151 4558
1/4 IC150 LF347
1/2 IC202# 4558
1/2 IC200# 4558
1/2 IC204# LF353
1/2 IC201# 4558
1/2 IC203# 4558
1/2 IC250 STK 4121-5
BASS
TREBLE
BASS OUT
TREBLE OUT
SOUND L
HA-LEFT
HA-RIGHT
MUTE
P-STEP S1
STAND BY S2
GREEN D200
ON
SIGNAL MUTE
MUTE LEFT
MUTE, HEADPHONE
MUTE, RIGHT
20V IN
-20V IN
TR101 BC847B
TR210# BC847B
TR211# BC847B
TR220# BC817-40
TR200# BC817-40
TR7# BC857B
TR5# BC847B
TR1 IRFZ24
TR2 BC337
TR3 BC327
TR4# BC847B
TR6# BC857B
TR240# BC847B
TR241# BC857B
D202# LED PART OF R206
PIN 4
D309
D310
D300
D301
P98
20V
-20V
15V
-15V
15VA
-15VA
5V
268
269
270
271
272
K302
K305
K306
K307
K308
K311
K312
G313
G314
F315
F317
1303
1304
330K

PART OF PAGE 2-3

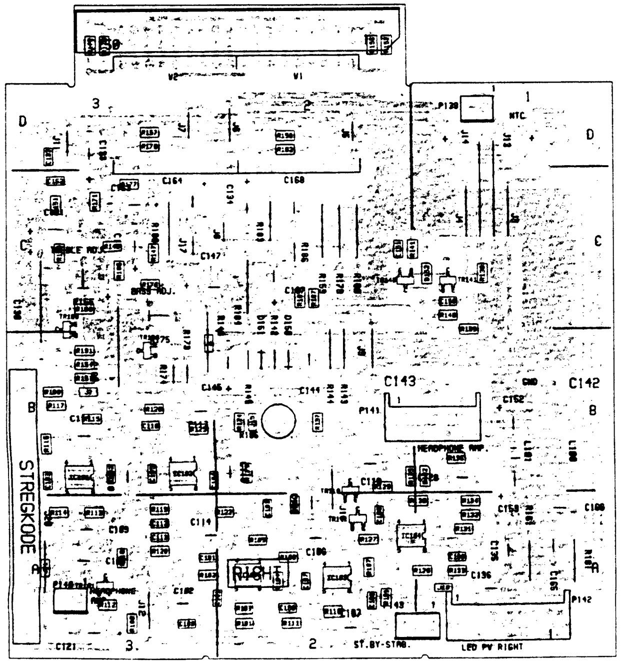

PCB 7/
34/36
DIAGRAM C
ST BY/
P-STEP
KEY
HEADPHONE
PCB 14
AV2
L
R
I²C
I²C
R
L
SOUND
CONTROLS
IC1
L
R
AV2
L
R
L
R
PL
PCB 10
DIAGRAM C
R
L
SOUND
OUTPUT
IC2.IC3
R
L
TO EXT
SPEAKERS


PCB 43
DIAGRAM L
STBY/
P-STEP
KEK
HEADPHONE
PCB 14
R
L
PCB 46
HEADPHONE
AMPLIFIER
DIAGRAM L, K
SOUND OUT
AND
ABL R
PCB 44
DIAGRAM K
R
SOUND OUT
AND
ABL L
PCB 45
DIAGRAM L
L

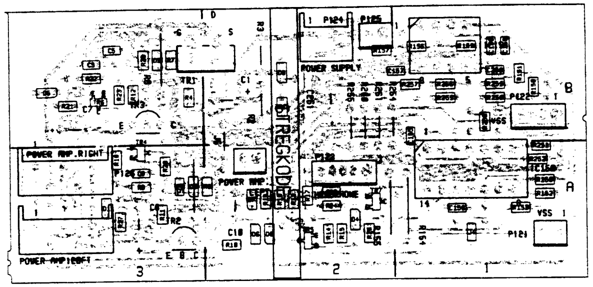
PCB 45


NTC
V2
V1
C242
C243
HEADPHONE AMP.
LEFT
P146
LED PV LEFT
P147
ST.BY-STAB.
STREGKODE
A
B
C
D
1
2
3

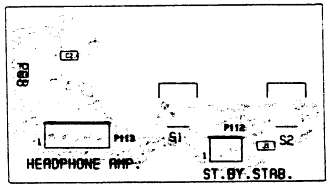
PCB 44


V2
V1
P120
NTC
C143
C142
P141
HEADPHONE AMP.
RIGHT
STREGKODE
ST.BY-STAB.
LED PV RIGHT
P142
A
B
C
D
1
2
3

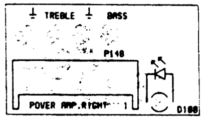
PCB 46


P124
P125
POWER SUPPLY
P122
POWER AMP.RIGHT
POWER AMP.LEFT
STREGKODE
VSS
P121
A
B
1
2
3

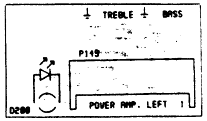
PCB 43


P88
P113
S1
P112
S2
HEADPHONE AMP.
ST.BY.STAB.

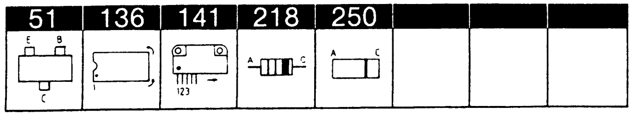
PCB 48


TREBLE
BASS
P148
POWER AMP.RIGHT
D188

PCB 49


TREBLE
BASS
P149
POWER AMP. LEFT
D288

LIST OF ELECTRICAL PARTS

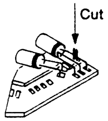


Resistors not referred to are standard, see page 10-2
△ indicates that static electricity may destroy the component

PCB 09, 8008789
IR Tranceriver

D8	8330236	**222**	LED

All other electrical parts are identical with 8007789, see page 3-6.



PCB 14, 8008479
Double AV Switch

P18	3169011	Socketpanel

All other electrical parts are identical with 8007479, see page 3-8.

PCB 43, 8008077
Headphone

C1-	4010132	1.0nF 10% 50V
C2		

P98	7210802	Socket headphone 3.5mm	P112	7220709	Plug 2/2
			P113	7220712	Plug 5/5

S1-	7400318	Switch 1pole
S2		

PCB 44, 8008066
Power Amp. right

IC100-△	8341022	**136**	4558	IC104△	8341033	**136**	LF353
IC103				IC150△	8350088	**141**	STK4121-5

TR100-	8320752	**51**	BC817-40	TR120	8320752	**51**	BC817-40
TR101				TR140	8320755	**51**	BC847B
TR110-	8320755	**51**	BC847B	TR141	8320811	**51**	BC857B
TR111							

D102	8300482	**250**	4148	D152	8300482	**250**	4148
D150-	8300779	**218**	1N4531				
D151							

R106	5210017	LDR/LED coupler	R148	5020159	100Ω 10% 0.3W
R130	5011328	4.7mΩ 10% 1/8W	R155	5370402	2.2kΩ 30% 0.3W
R143-	5021301	10kΩ 1% 1/8W	R175	5370402	2.2kΩ 30% 0.3W
R144					

C100-	4110220	100nF 10% 50V	C120	4130234	470nF 10% 63V
C101			C121	4201174	2.2µF 20% 50V
C102	4130308	220nF 10% 63V	C130	4201035	2.2µF -20+50% 63V
C103	4010220	100nF 10% 50V	C131	4200826	10µF 20% 16V
C104	4010209	47nF 10% 50V	C132	4010170	2.2nF 10% 50V
C105-	4130308	220nF 10% 63V	C133	4200826	10µF 20% 16V
C106			C134	4200688	47µF 20% 50V
C107	4130240	47nF 10% 63V	C135-	4130233	220nF 20% 63V
C108-	4100239	4.7nF 5% 63V	C136		
C111			C142-	4201156	4700µF 20% 40V
C112	4010172	3.3nF 10% 50V	C143		
C113	4010157	10nF 10% 50V	C144	4200672	22µF 20% 16V
C114	4130305	33nF 10% 63V	C145	4200617	47µF 20% 10V
C116	4130306	100nF 10% 63V	C147	4200368	100µF -20+50% 63V
C117	4010103	2.2nF 10% 50V	C150-	4010157	10nF 10% 50V
C118	4000326	680pF 5% 50V	C151		
C119	4130399	1µF 10% 63V	C152-	4201173	10µF 20% 50V

C153			C165-	4130233	220nF 20% 63V
C160	4201035	2.2µF -20+50% 63V	C166		
C161	4200826	10µF 20% 16V	C167	4201173	10µF 20% 50V
C162	4010170	2.2nF 10% 50V	C168	4130313	470nF 20% 63V
C163	4200826	10µF 20% 16V	C180-	4010166	100nF -20+80% 50V
C164	4200688	47µF 20% 50V	C189		

L100	8020747	Coil 1mH 10%
L101		

P138-	7220709	Plug 2/2	P142	7220429	Plug 7/7
P140			P143	7220710	Plug 3/3
P141	7220427	Plug 5/5			

W1-	6200189	Flex cable
W2		

PCB 45, 8008068
Power Amp. left

IC200-△	8341022	**136**	4558	IC204△	8341033	**136**	LF353
IC203				IC250△	8350088	**141**	STK4121

TR200-	8320752	**51**	BC817-40	TR220	8320752	**51**	BC817-40
TR201				TR240	8320755	**51**	BC547B
TR210-	8320755	**51**	BC847B	TR241	8320811	**51**	BC857B
TR211							

D202	8300482	**250**	4148	D252	8300482	**250**	4148
D250-	8300779	**218**	1N4531				
D251							

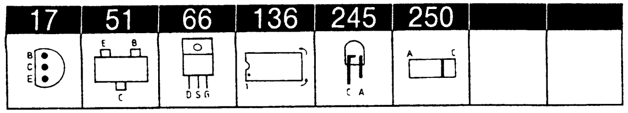
R206	5210017	LDR/LED coupler	R248	5020159	100Ω 10% 0.3W
R230	5011328	4.7mΩ 10% 1/8W	R255	5370402	2.2kΩ 30% 0.3W
R243-	5021301	10kΩ 1% 1/8W	R275	5370402	2.2kΩ 30% 0.3W
R244					

C200-	4010220	100nF 10% 50V	C235-	4130233	220nF 20% 63V
C201			C236		
C202	4130308	220nF 10% 63V	C242-	4201156	4700µF 20% 40V
C203	4010220	100nF 10% 50V	C243		
C204	4010209	47nF 10% 50V	C244	4200672	22µF 20% 16V
C205-	4130308	220nF 10% 63V	C245	4200617	47µF 20% 10V
C206			C247	4200368	100µF -20+50% 63V
C207	4130240	47nF 10% 63V	C250-	4010157	10nF 10% 50V
C208-	4100239	4.7nF 5% 63V	C251		
C211			C252-	4201173	10µF 20% 50V
C212	4010172	3.3nF 10% 50V	C253		
C213	4010157	10nF 10% 50V	C260	4201035	2.2µF -20+50% 63V
C214	4130305	33nF 10% 63V	C261	4200826	10µF 20% 16V
C216	4130306	100nF 10% 63V	C262	4010170	2.2nF 10% 50V
C217	4010103	2.2nF 10% 50V	C263	4200826	10µF 20% 16V
C218	4000326	680pF 5% 50V	C264	4200688	47µF 20% 50V
C219	4130399	1µF 10% 63V	C265-	4130233	220nF 20% 63V
C220	4130234	470nF 10% 63V	C266		
C230	4201035	2.2µF -20+50% 63V	C267	4201173	10µF 20% 50V
C231	4200826	10µF 20% 16V	C268	4130313	470nF 20% 63V
C232	4010170	2.2nF 10% 50V	C280-	4010166	100nF -20+80% 50V
C233	4200510	10µF 20% 16V	C289		
C234	4200688	47µF 20% 50V			

L200-	8020747	Coil 1mH 10%
L201		

P137-	7220709	Plug 2/2	P146	7220429	Plug 7/7
P144			P147	7220710	Plug 3/3
P145	7220427	Plug 5/5			

W1-	6200189	Flex cable
W2		



Resistors not referred to are standard, see page 10-2
△ indicates that static electricity may destroy the component

PCB 46, 8008064
Headphone Amplifier and Power Supply

IC150△	8340205	**136**	LF347	IC151△	8340790	**136**	4558
TR1	8320946	**66**	IRF224	TR4-TR5	8320755	**51**	BC847B
TR2	8320507	**17**	BC337-25	TR6-TR7	8320811	**51**	BC857B
TR3	8320552	**17**	BC327-25				
D1	8300772	**250**	24V 5% 0.4W	D4	8300482	**250**	4148
D2-D3	8300773	**250**	15.0V 2% 0.5W	D5	8300772	**250**	24V 5% 0.4W
				D6-D9	8300482	**250**	4148
R5	5020345		47Ω 10% 0.3W	R8	5020345		47Ω 10% 0.3W
C1	4200688		47μF 20% 50V	C10	4200672		22μF 20% 16V
C4-C5	4010170		2.2nF 10% 50V	C150	4010170		2.2nF 10% 50V
				C155-C158	4010166		100nF -20+80% 50V
C6-C7	4201173		10μF 20% 50V	C250	4010170		2.2nF 10% 50V
C8-C9	4010157		10nF 10% 50V	C251	4201174		2.2μF 20% 50V
P121	7220709		Plug 2/2	P125	7220709		Plug 2/2
P122	7220711		Plug 4/4	P126	7220427		Plug 5/5
P123	7220712		Plug 5/5	P127	7220709		Plug 2/2
P124	7220424		Plug 2/2	P128	7220427		Plug 5/5

PCB 48, 8008070
Led right

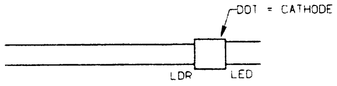
D1	8330318	**245**	LED green
P148	7220429		Plug 7/7

PCB 49, 8008072
Led left

D200	8330318	**245**	LED green
P149	7220429		Plug 7/7

PCB 32, 8008083
St by Stabilization

P111	7220709	Plug 2/2
P114	7220710	Plug 3/3
P115		
	5220051	NTC 330KΩ



44R106/45R206

Standard Resistors:

Resistors 5% 1/2 W

	x1	x10	x100	x1K	x10K	x100K	x1M	x10M
1.0		5011000	5011013	5011028	5011044	5010313	5011069	5011083
1.2	5011406	5011001	5011014	5011030	5011045	5011058	5010421	
1.5	5010727	5011002	5011015	5011031	5011046	5011059	5011071	
1.8	5010857	5010787	5011016	5011033	5011047		5011072	
2.2	5011335	5010708	5010815	5011034	5011048	5011061	5011074	
2.7	5011612	5010803	5011018	5010055	5011049	5011062	5011075	
3.3	5010255	5011007	5011019	5011037		5011063	5010381	
3.9		5010782	5011021	5010700	5011051		5010392	
4.7	5010765	5011009	5011022	5010035	5010036	5011065	5011078	
5.6		5011010	5011023	5011041		5011066	5011079	
6.8	5010874	5011011	5011024	5011042	5010810	5011067	5011080	
8.2		5011012	5011026	5011043	5010038	5011068	5011081	

Resistors 5% 1/4 W

	x1	x10	x100	x1K	x10K	x100K	x1M	x10M
1.0	5010592	5010506	5010065	5010040	5010059	5010049	5010054	5010638
1.2		5010595	5010128	5010153	5010046	5010047	5010665	
1.5	5011348	5010468	5010057	5010247	5010053	5010063	5010093	
1.8		5010822	5010362	5010066	5010135	5010072	5010791	
2.2	5010682	5010448	5010092	5010064	5010079	5010120	5010245	
2.7	5010925	5010403	5010000	5010298	5010141	5010083	5010431	
3.3		5010253	5010044	5010076	5010075	5010117	5010848	
3.9	5011377	5010622	5010070	5010069	5010060	5010073	5010714	
4.7	5010888	5010411	5010058	5010048	5010045	5010077	5011513	
5.6	5010706	5010151	5010067	5010041	5010061	5010071	5010658	
6.8	5010904	5010039	5010144	5010052	5010062	5010074		
8.2	5010880	5010056	5010068	5010154	5010091	5010505		

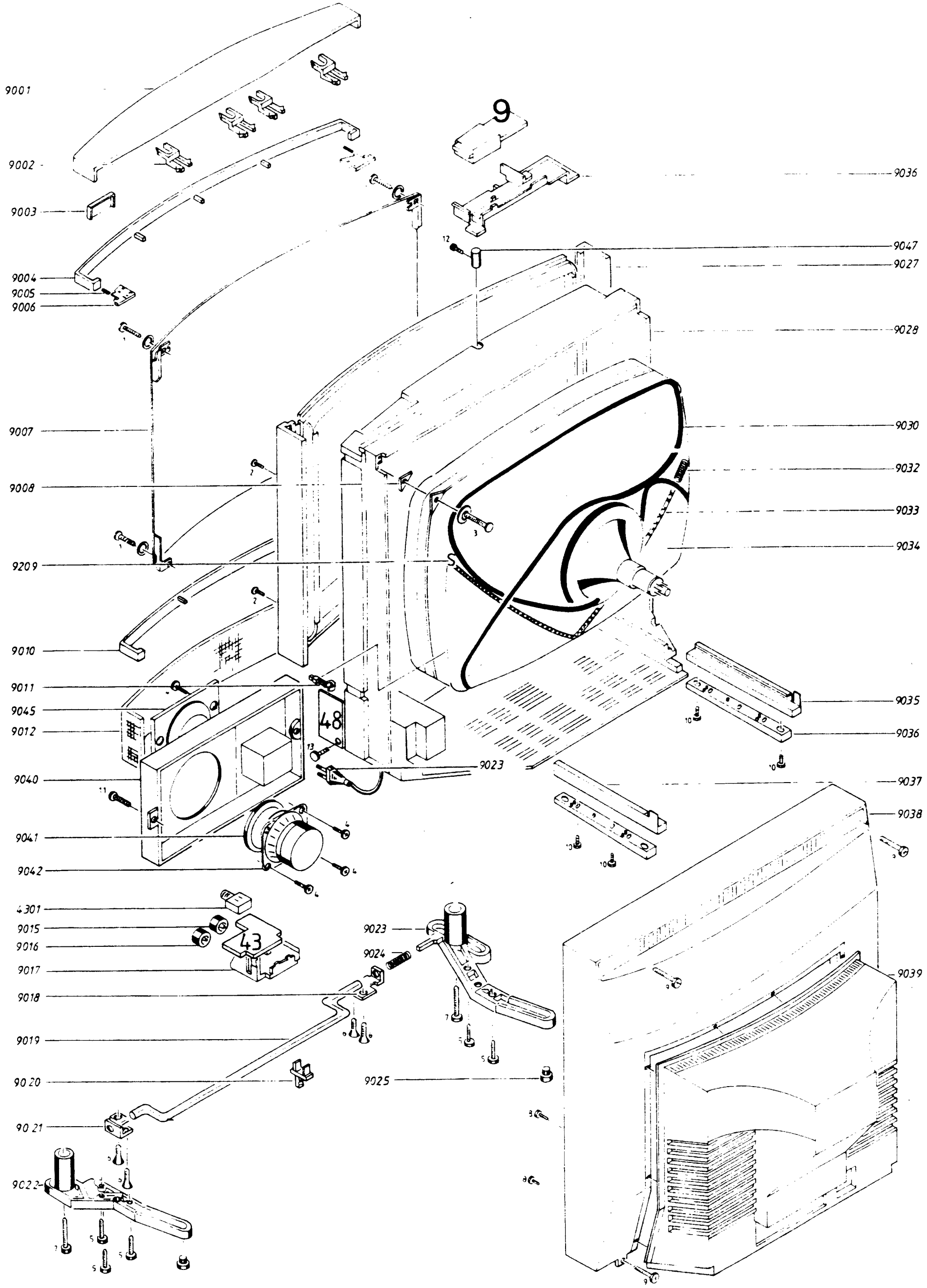
Resistors 5% 1/8 W

	x1	x10	x100	x1K	x10K	x100K	x1M	x10M
1.0		5011464	5011357	5010816	5010935	5011440	5011459	5020875
1.2		5011351	5011084	5011442	5011338	5011341	5011175	
1.5		5011463	5011443	5011178	5011364	5011398	5011460	
1.8			5011350	5011361	5011344	5011468		
2.2	5011032	5011376	5010886	5011353	5010833	5011369	5011342	
2.7		5011471	5011355	5011362	5011366	5011370	5011478	
3.3		5011347	5011337	5010827	5011346	5011371	5011462	
3.9		5011438	5011817	5011157	5011457	5011372	5020876	
4.7	5011363	5011038	5011441	5011363	5010937	5011343	5011611	
5.6		5011412	5011358	5010885	5011166	5011340		
6.8		5011356	5011336	5010839	5011367	5011458		
8.2		5011466	5011354	5011339	5011368	5011373		

Resistors SMD 2% 1/8 W
SMD 5% 1/8 W

	5%	2%	2%	2%	2%	2%	5%	5%
	x1	**x10**	**x100**	**x1K**	**x10K**	**x100K**	**x1M**	**x10M**
1.0	5011623	5011647	5011218	5011227	5011241	5011256	5011267	5011730
1.1	5011624	5011648	5011669	5011681	5011689	5011694	5011707	
1.2	5011625	5011649	5011219	5011682	5011490	5011257	5011708	
1.3	5011626	5011650	5011670	5011683	5011242	5011258	5011709	
1.5	5011627	5011651	5011220	5011228	5011243	5011259	5011710	
1.6	5011628	5011652	5011671	5011684	5011690	5011695	5011711	
1.8	5011629	5011653	5011672	5011229	5011244	5011260	5011712	
2.0	5011630	5011654	5011673	5011685	5011691	5011696	5011713	
2.2	5011216	5011655	5011674	5011230	5011245	5011261	5011714	
2.4	5011634	5011656	5011675	5011686	5011246	5011697	5011715	
2.7	5011635	5011657	5011497	5011231	5011247	5011262	5011716	
3.0	5011731	5011658	5011499	5011500	5011692	5011698	5011717	
3.3	5011217	5011659	5011676	5011232	5011248	5011263	5011718	
3.6	5011636	5011660	5011677	5011687	5011249	5011264	5011719	
3.9	5011637	5011661	5011221	5011233	5011491	5011699	5011720	
4.3	5011638	5011662	5011498	5011688	5011492	5011700	5011721	
4.7	5011639	5011269	5011222	5011234	5011250	5011265	5011722	
5.1	5011640	5011663	5011678	5011235	5011493	5011701	5011723	
5.6	5011641	5011664	5011223	5011236	5011251	5011702	5011724	
6.2	5011642	5011665	5011224	5011237	5011693	5011703	5011725	
6.8	5011643	5011666	5011225	5011238	5011252	5011704	5011726	
7.5	5011644	5011667	5011679	5011239	5011253	5011705	5011727	
8.2	5011645	5011270	5011226	5011240	5011254	5011266	5011728	
9.1	5011646	5011668	5011680	5011489	5011255	5011706	5011729	

(Glue dots, approx. 200, part no. 3181932).



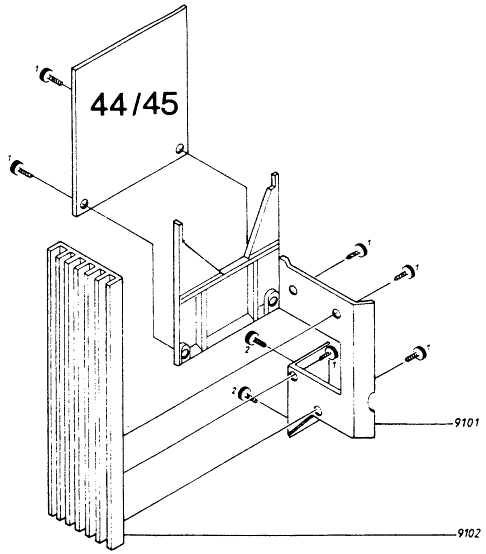
Beovision MX 7000

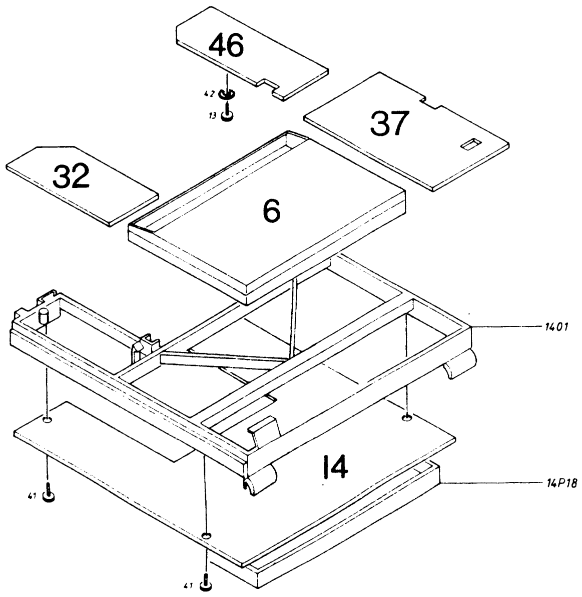
9001	3451008	Lid
9002	2391070	Hinge
9003	3322092	Window
9004	3450701	Cap
9006	3164687	Holder
9007	3451039	Contrast screen
9008	2640053	Spacer
9009	2510119	Clamp
9010	3451186	Cap
9011	3152778	Holder
9012	3320205	Loudspeaker panel
9015	2776033	Press button-STEP
9016	2776032	Press button - ●
9017	3152797	Holder
9018	3031175	Fitting f/tilting foot, left
9019	3103238	Tilting foot
9020	3152566	Holder f/tilting foot
9021	3031129	Fitting f/tilting foot, right
9022	3031157	Fitting f/bottom, right
9023	3031234	Fitting f/bottom, left
9024	2819237	Spring
9025	3035032	Rubber foot
9026	3131329	Holder
9027	3320159	Front frame w/rubber string
	3950029	Rubber string
9028	3320162	Chassis w/foot
	3946083	Tightening, side
	3946084	Tightening, top/bottom
	3103287	Foot
9030	8022222	Degaussing coil
9032	2810189	Tension spring
9033	7510041	Ground current
9034	8200074	Picture tube
9035	3152677	Guide rail, left
9036	2576242	Spacer f/rail
9037	3152678	Guide rail, right
9038	3414244	Back cover, red
	3414245	Back cover, white
	3414246	Back cover, black
	3414248	Back cover, blue
	3414249	Back cover, grey
9039	3430472	Back cover, small
9040	3440157	Loudspeaker panel, right
	3440145	Loudspeaker panel, left
	3340099	Rubber string
9041	3340114	Gasket
9042	8480246	Loudspeaker, bass
9043	6275993	Mains lead w/filter
	6275989	Mains lead AUS
9045	8480237	Loudspeaker, treble
9047	2576248	Spacer
	8007703	Crossover network
	3332041	Damping material, small
	3332042	Damping material, large

03Modul	8008099	PCB3, Video Output
43Modul	8008077	PCB 7, Headphone
4301	7210742	Socket headphone 3.5mm
09Modul	8007789	PCB 9, IR Transceiver
	3302467	Shield, top
	3302468	Shield, bottom
	3375070	Linse f/IR
	3152809	Holder f/diode
48Modul	8008070	Led, right
49Modul	8008072	Led, left

Survey of screws

1	2015129	Screw 3.5 x 12mm w/washer
2	2013123	Screw 3 x 10mm
3	2044048	Screw 5 x 25mm w/washer
4	2015142	Screw 3.5 x 10mm
5	2019018	Screw 4 x 16mm
6	2019015	Screw 4 x 14mm
7	2021003	Screw 5 x 35mm
8	2019017	Screw 4 x 10mm
9	2021010	Screw 5 x 25/11mm
10	2019018	Screw 4 x 16mm
11	2019021	Screw 4 x 12mm
12	2013182	Screw 3 x 20mm
13	2038097	Screw 3 x 6mm





9101	3152895	Holder, left
9102	3152896	Holder, right

Survey of screws

1	2011055	Screws 3x10
2	2015142	Screw 3.5x10

6module	8008133	Microcomputer 64k
	8008134	Microcomputer 64k, AUS
14module	8008479	Double AV Switch
1401	3152794	Chassis
14P18	3169011	DIN/Scart panel
32module	8008083	St By Stabilization
46module	8008064	Headphone Amplifier
44module	8008066	Power Amp. right
45module	8008068	Power Amp. left

Owner's manuals

3501410	Danish
3501411	Swedish
3501412	Finnish
3501413	English
3501414	German
3501415	Dutch
3501416	French
3501417	Italian
3501418	Spanish

Survey of wire bundles

6276698	Main wire bundle Consist of: 4P13 - 32P79 4P17 - 46P124 4P15 - 14P57 4P12 - 1P5 4P11 - 4P16 1P4 - 37P40 4P18 - 13P36 1P8 - 6P70 37P41 - 39/41P28 32P81 - 39/41P31 14P53 - 37P43
6276705	Wire bundle activ sound Consist of: 46P123 - 43P113 46P125 - 44P140 46P126 - 44P141 46P127 - 45P144 46P128 - 45P145 32P111 - 43P112 32P114 - 44P143 32P115 - 45P147
6276695	Main wire bundle w/shielded wires Consist of: 4P55 - 39/41P27 4P156 - 39/41P26 4P59 - 1/38P9 4P58 - 1/38P6 4CP1 - 39/41CP10

6276681	Wire bundle f. Picture in Picture Consist of: 47P107 - 39/41P32 47P108 - 39/41P33
6276020	46P122 - 14P51
6276699	46P121 - 14P110
6276704	44P142 - 48P148
6276366	44P138 - To NTC
6276704	45P146 - 48P149
6276366	45P137 - To NTC
6276484	13P37 - 39/41P29
6276568	13P38 - 39/41P28
6276475	37P42 - 14P54
6276037	31P96 - 38P3
6276479	31P94 - 1/38P1
6276480	31P97 - 1/38P7
6276568	31P95 - 1/38P2
6276285	3P89 - 4P14
6276206	3P90 - 39/41P30
6276536	9P85 - 32P82
6276476	6P71 - 14P60
6276483	6P72 - 14P61
6276485	6P73 - 14P62
6276481	6P74 - 32P78
6276482	6P75 - 32P77
6276503	4P22 - Deflection
6100308	M48 - Speaker unit
6100309	M48 - Speaker unit
6100308	M49 - Speaker unit
6100309	M49 - Speaker unit

ADJUSTMENT

Adjustment of bass/treble levels

When a speaker is replaced, the level has to be adjusted.
The new unit will have a rated value printed on the back, stated in dB.

This is the target value of the adjustment.

The speaker units need not be connected when the adjustment is performed.

1. Connect an audio oscillator to the AUDIO AUX LINK socket:
   - right channel, pin 5.
   - left channel, pin 3.
   - ground, pin 2.

Signal levels

When adjusting a tweeter, apply a signal of 10kHz - 500mV.

When adjusting a woofer, apply a signal of 1kHz - 500mV.

2. The TV must be switched on during the adjustment, and the following settings must be used:

Volume	60
Bass	0
Treble	0
Balance	0
Loudness	0

NOTE!
If this audio setup is not stored, it has to be repeated in case the TV is switched on after having been switched off during the adjustment procedure.

3. To obtain an input signal from the AUDIO AUX LINK socket, press AV RADIO.

4. Connect a AC voltmeter across the connection terminals of the replaced unit.
   Adjust by means of:

Tweeter

right channel:	R155-PCB44
left channel:	R255-PCB45

Woofer

right channel:	R175-PCB44
left channel:	R275-PCB45

to the voltage in Table 1 that corresponds to the rated value.

Replacement of PCB44

When PCB44 is replaced, the level of the tweeter has to be adjusted to 2,39V by means of R155-PCB44 and that of the woofer to 2,04V by means of R175-PCB44.

Replacement of PCB45

When PCB45 is replaced, the level of the tweeter has to be adjusted to 2,39V by means of R255-PCB45 and that of the woofer to 2,04V by means of R275-PCB45.

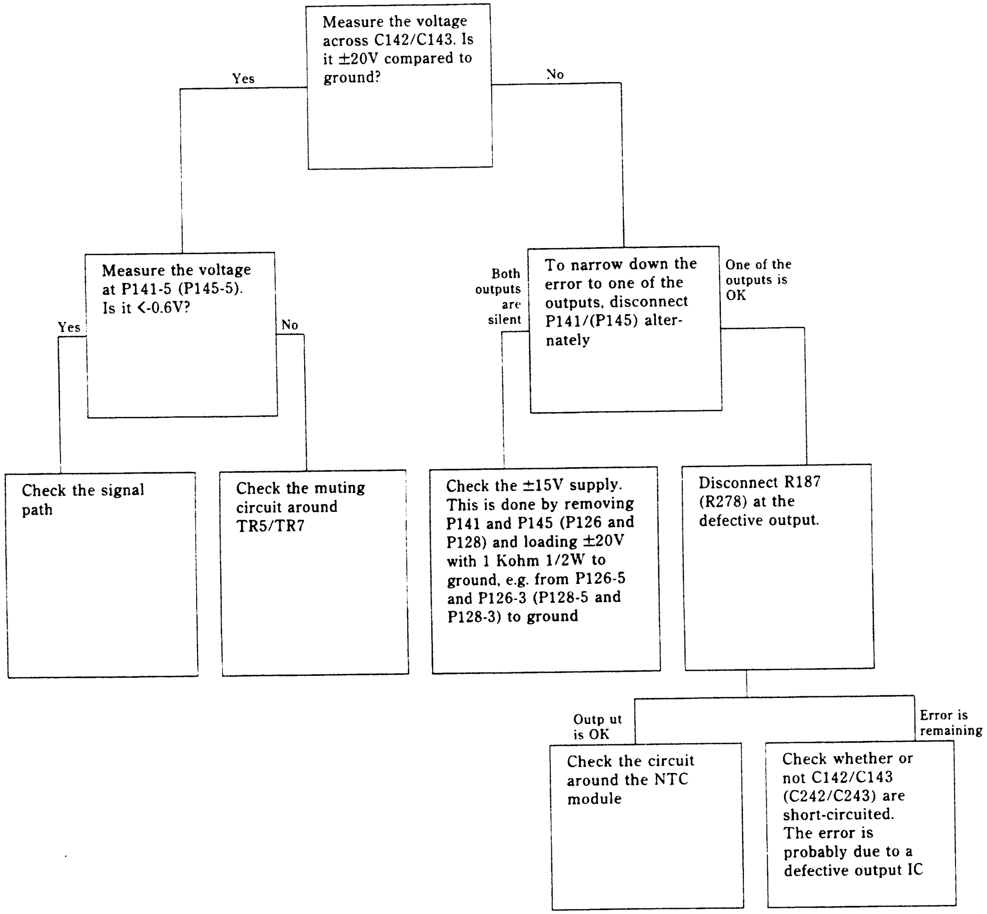
Rated value in dB	Treble	Bass
2,00	1,90V	1,62V
1,75	1,96V	1,67V
1,50	2,01V	1,72V
1,25	2,07V	1,77V
1,00	2,13V	1,82V
0,75	2,19V	1,88V
0,50	2,26V	1,93V
0,25	2,32V	1,98V
0,00	2,39V	2,04V
-0,25	2,46V	2,10V
-0,50	2,53V	2,17V
-0,75	2,61V	2,23V
-1,00	2,68V	2,29V
-1,25	2,76V	2,36V
-1,50	2,84V	2,43V
-1,75	2,93V	2,50V
-2,00	3,01V	2,57V

Tabel 1

Repair tips

If both outputs are silent, this will often be due to an uneven loading of the ±20V supply.
The chart below can be used to pinpoint the reason for the error.

Position numbers in brackets apply to the left channel.


Measure the voltage across C142/C143. Is it ±20V compared to ground?
Yes
No
Measure the voltage at P141-5 (P145-5). Is it <-0.6V?
Yes
No
Check the signal path
Check the muting circuit around TR5/TR7
To narrow down the error to one of the outputs, disconnect P141/(P145) alternately
Both outputs are silent
One of the outputs is OK
Check the ±15V supply. This is done by removing P141 and P145 (P126 and P128) and loading ±20V with 1 Kohm 1/2W to ground, e.g. from P126-5 and P126-3 (P128-5 and P128-3) to ground
Disconnect R187 (R278) at the defective output.
Outp ut is OK
Error is remaining
Check the circuit around the NTC module
Check whether or not C142/C143 (C242/C243) are short-circuited. The error is probably due to a defective output IC

ABL (Adaptive Bass Linearization)

The ABL function is checked most easily by connecting an audio oscillator (80 Hz) to the AUDIO AUX LINK socket.

The following settings must be used during the testing procedure:

Volume	80
Bass	0
Treble	0
Balance	0
Loudness	0

NOTE!
If this audio setup is not stored, it has to be repeated in case the TV is switched on after having been switched off during the adjustment procedure.

To obtain an input signal from the AUDIO AUX LINK socket, press AV RADIO.

Connect a DC voltmeter across R137-PCB44 (R237-PCB45).

Set the audio oscillator level to approx. 70mV, and then increase it slowly until the voltage across R137-PCB44 (R237-PCB45) just begins to increase from 0V. The voltage must be between 0 and 30mV. In this condition the ABL will just be active.

Then increase the level at the input by 10dB.

The voltage across R137-PCB44 (R237-PCB45) must increase to approx. 2.6V immediately.

Damp the level at the input by 10dB.

After 5 to 10 seconds, the voltage across R137-PCB44 (R237-PCB45) must drop to approx. 0V. The ABL is now out of operation.

EINSTELLUNG

Einstellung des Tiefen-/Höhenpegels

Nach Austausch des Lautsprechers muß der Pegel neu eingestellt werden. Auf der Rückseite der neuen Lautsprechereinheit ist ein in dB aufgedruckter Wert angegeben.

Dies ist der Wert, auf den eingestellt werden muß.
Es ist nicht notwendig, daß die Lautsprechereinheiten während des Einstellvorgangs angeschlossen sind.

1. Tongenerator an die AUDIO AUX LINK-Buchse anschließen:
   - Der rechte Kanal an Anschluß 5.
   - Der linke Kanal an Anschluß 3.
   - Masse an Anschluß 2.

Signalpegel

Zum Einstellen des Hochtonlautsprechers ist ein Signal von 10 kHz - 500 mV zuzuführen.

Zum Einstellen des Tieftonlautsprechers ist ein Signal von 1 kHz - 500 mV zuzuführen.

2. Während des Einstellvorgangs muß das TV-Gerät eingeschaltet sein. Es müssen die folgenden Einstellungen vorgenommen sein:

Volume	60
Bass	0
Treble	0
Balance	0
Loudness	0

Hinweis!
Sofern diese Klang-Einstellung nicht abgespeichert wird, muß die Einstellung wiederholt werden, falls das TV-Gerät während des Einstellvorgangs abgeschaltet gewesen ist.

3. Um ein Signal von der AUDIO AUX LINK-Buchse hereinzubekommen, sind die Tasten AV RADIO zu drücken.

4. Danach ein AC-Voltmeter über die Anschlußklemmen der ausgetauschten Einheit anschließen.
   Mit Hilfe der Widerstände

Hochton:

Rechter Kanal:	R155-PCB44
Linker Kanal:	R255-PCB45

Tiefton:

Rechter Kanal:	R175-PCB44
Linker Kanal:	R275-PCB45

wird jetzt auf die in Tabelle 1 angeführte Spannung, welche dem angegebenen Wert entspricht, abgeglichen.

Austausch von PCB44

Nach Austausch von PCB44 muß der Pegel des Hochtonlautsprechers mittels R155-PCB44 auf 2,39 V eingestellt werden; der Pegel des Tieftonlautsprechers ist mittels R175-PCB44 auf 2,04 V einzustellen.

Austausch von PCB45

Nach Austausch von PCB45 muß der Pegel des Hochtonlautsprechers mittels R255-PCB45 auf 2,39 V eingestellt werden; der Pegel des Tieftonlautsprechers ist mittels R275-PCB45 auf 2,04 V einzustellen.

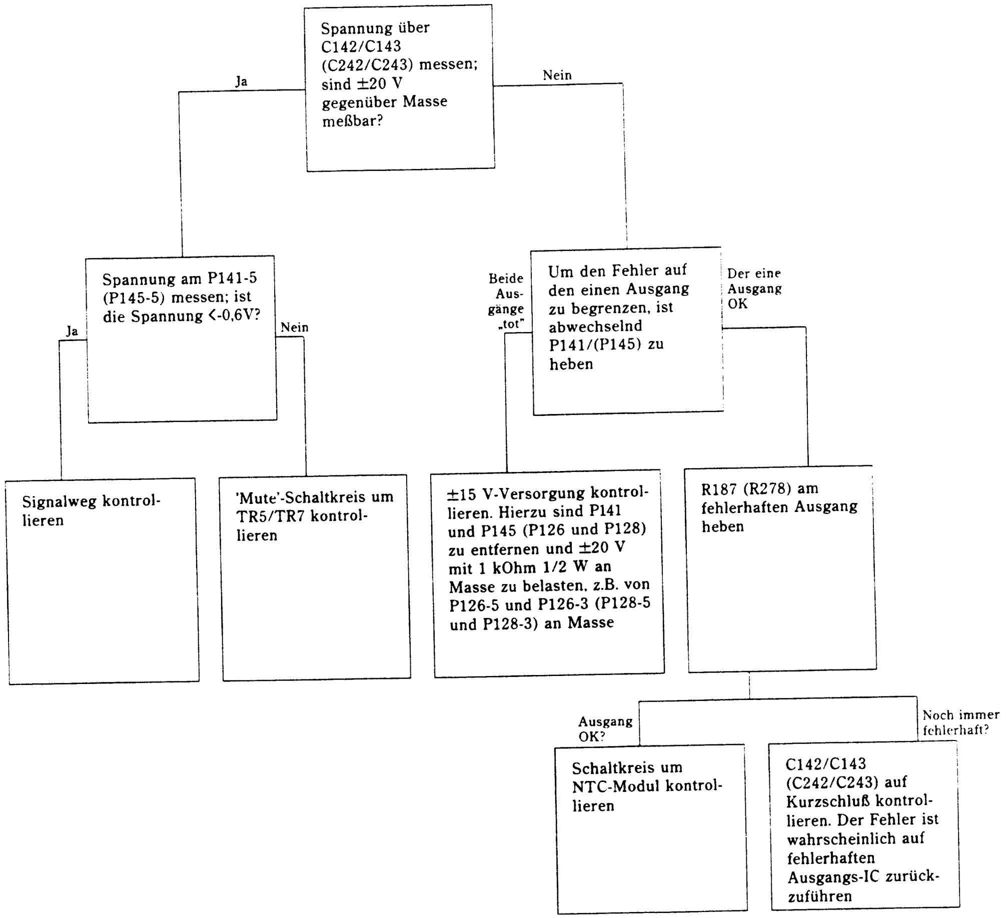
Wert in dB	Hochtöner	Tieftöner
2,00	1,90V	1,62V
1,75	1,96V	1,67V
1,50	2,01V	1,72V
1,25	2,07V	1,77V
1,00	2,13V	1,82V
0,75	2,19V	1,88V
0,50	2,26V	1,93V
0,25	2,32V	1,98V
0,00	2,39V	2,04V
-0,25	2,46V	2,10V
-0,50	2,53V	2,17V
-0,75	2,61V	2,23V
-1,00	2,68V	2,29V
-1,25	2,76V	2,36V
-1,50	2,84V	2,43V
-1,75	2,93V	2,50V
-2,00	3,01V	2,57V

Tabelle 1

Reparaturtips

Falls beide Ausgänge „tot" sind:
Falls beide Ausgänge „tot" sind, ist dies meistens auf „schiefe" Belastung der ±20 V-Versorgung zurückzuführen. Um die Fehlerursache festzustellen, kann das nachstehende Schema herangezogen werden.

Die in Klammern angeführten Positionsnummern beziehen sich auf den linken Kanal.



Spannung über C142/C143 (C242/C243) messen; sind ±20 V gegenüber Masse meßbar?

Spannung am P141-5 (P145-5) messen; ist die Spannung <-0,6V?

Um den Fehler auf den einen Ausgang zu begrenzen, ist abwechselnd P141/(P145) zu heben

Signalweg kontrollieren

'Mute'-Schaltkreis um TR5/TR7 kontrollieren

±15 V-Versorgung kontrollieren. Hierzu sind P141 und P145 (P126 und P128) zu entfernen und ±20 V mit 1 kOhm 1/2 W an Masse zu belasten, z.B. von P126-5 und P126-3 (P128-5 und P128-3) an Masse

R187 (R278) am fehlerhaften Ausgang heben

Schaltkreis um NTC-Modul kontrollieren

C142/C143 (C242/C243) auf Kurzschluß kontrollieren. Der Fehler ist wahrscheinlich auf fehlerhaften Ausgangs-IC zurückzuführen

ABL (Adaptive Bass Linearization)

Die Kontrolle der ABL-Funktion erfolgt am einfachsten durch Anschließen eines Tongenerators (80 Hz) an die AUDIO AUX LINK-Buchse.

Während des Prüfvorgangs müssen die folgenden Einstellungen vorgenommen sein:

Volume	80
Bass	0
Treble	0
Balance	0
Loudness	0

Hinweis!
Sofern diese Klang-Einstellung nicht abgespeichert wird, muß die Einstellung wiederholt werden, falls das TV-Gerät während des Einstellvorgangs abgeschaltet gewesen ist.

Um ein Signal von der AUDIO AUX LINK-Buchse hereinzubekommen, sind die Tasten AV RADIO zu drücken.

Danach ein DC-Voltmeter über R137-PCB44 (R237-PCB45) anschließen.

Den Pegel am Tongenerator auf ca. 70 mV einstellen und dann langsam hinaufdrehen, bis die Spannung über R137-PCB44 (R237-PCB45) gerade von 0 V anzusteigen beginnt; die Spannung muß zwischen 0 – 30 mV liegen. In diesem Bereich ist die ABL-Funktion gerade aktiv.

Nun den Pegel am Eingang um 10 dB erhöhen.
Die Spannung über R137-PCB44 (R237-PCB45) muß jetzt sofort auf ca. 2,6 V ansteigen.

Nun den Pegel am Eingang um 10 dB zurücknehmen.

Nach Verlauf von 5 - 10 Sekunden muß die Spannung über R137-PCB44 (R237-PCB45) auf ca. 0 V abfallen. Die ABL-Funktion ist jetzt außer Betrieb.

REGLAGE

Réglage du niveau des graves et des aigus

Il convient de régler le niveau lors du remplacement de l'enceinte. Une valeur exprimée en dB est indiquée sur la face arrière de la nouvelle enceinte.

Il s'agit de la valeur de réglage.

Lors du réglage, il n'est pas nécessaire de raccorder les enceintes.

1. Raccorder un oscillateur à basse fréquence à
   - la borne 5 de la prise AUDIO AUX LINK pour la voie droite

     et à

   - la borne 3 de la prise AUDIO AUX LINK pour la voie gauche.
   - Relier la masse à la borne 2.

Niveaux des signaux

Appliquer un signal de 10 kHz – 500 mV pour régler le haut-parleur des aigus.

Appliquer un signal de 1 kHz – 500 mV pour régler le haut-parleur des graves.

2. Lors du réglage, le téléviseur doit être allumé et les réglages suivants doivent avoir été effectués :

Volume	60
Bass	0
Treble	0
Balance	0
Loudness	0

Attention !
Il convient de procéder à un nouveau réglage si le téléviseur a été coupé lors de la procédure et que cette configuration "son" n'a pas été mémorisée.

3. Appuyer sur AV RADIO pour appliquer le signal venant de la prise AUDIO AUX LINK.

4. Utiliser les bornes de connexion pour raccorder un voltmètre ca à la nouvelle unité.
   Régler les composants suivants pour obtenir la tension mentionnée au tableau 1 correspondant à la valeur indiquée :

Pour les aigus :

voie droite :	R155-PCB44
voie gauche :	R255-PCB45

Pour les graves :

voie droite :	R175-PCB44
voie gauche :	R275-PCB45

Remplacement de la carte PCB44 Lors du remplacement de la carte PCB44, régler le niveau du HP d'aigu sur 2,39 V en agissant sur R155-PCB44. Ajuster le niveau du HP de grave sur 2,04 V en utilisant R175-PCB44.

Remplacement de la carte PCB45 Lors du remplacement de la carte PCB45, régler le niveau du HP d'aigu sur 2,39 V en agissant sur R255-PCB45. Ajuster le niveau des graves sur 2,04 V en utilisant R275-PCB45.

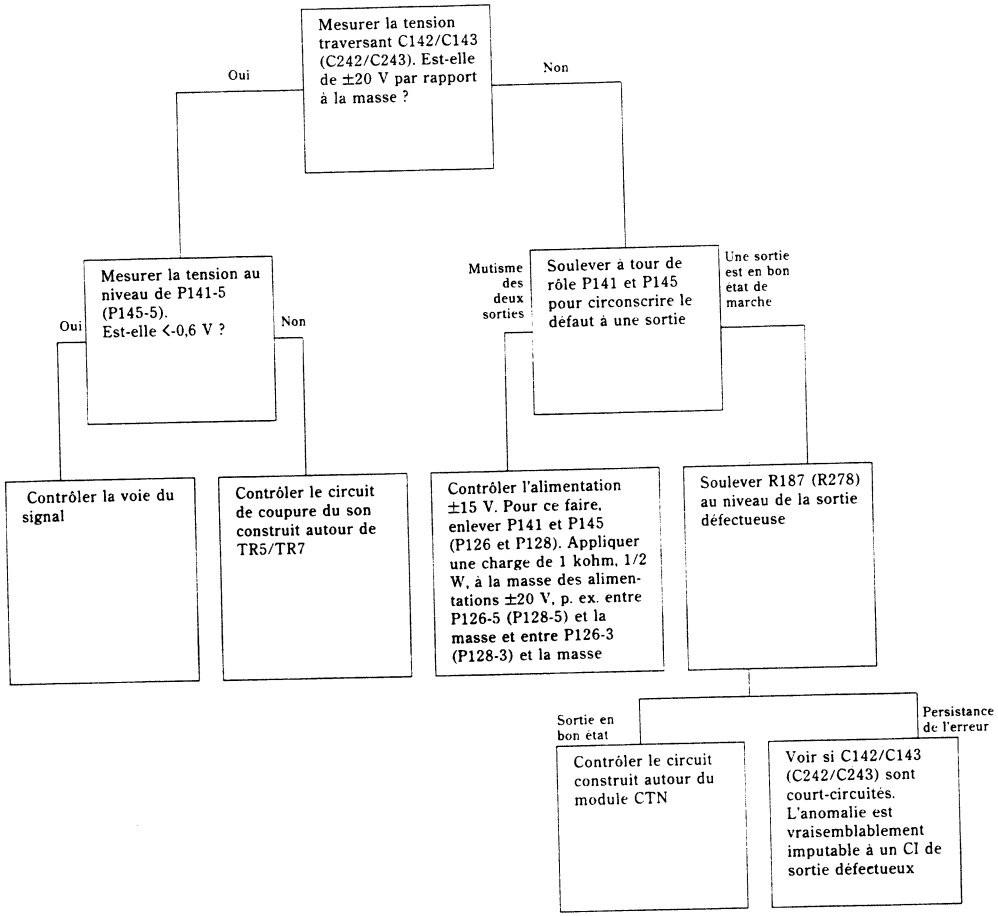
Indication en dB	Aigus	Grave
2,00	1,90V	1,62V
1,75	1,96V	1,67V
1,50	2,01V	1,72V
1,25	2,07V	1,77V
1,00	2,13V	1,82V
0,75	2,19V	1,88V
0,50	2,26V	1,93V
0,25	2,32V	1,98V
0,00	2,39V	2,04V
-0,25	2,46V	2,10V
-0,50	2,53V	2,17V
-0,75	2,61V	2,23V
-1,00	2,68V	2,29V
-1,25	2,76V	2,36V
-1,50	2,84V	2,43V
-1,75	2,93V	2,50V
-2,00	3,01V	2,57V

Tableau 1

Conseils de réparation

Le mutisme des deux sorties est souvent imputable à une mauvaise répartition de la charge appliquée à l'alimentation ±20 V. L'algorithme ci-dessous peut servir à déterminer l'origine de l'anomalie.

Les indications entre parenthèses renvoient à la voie gauche.


Mesurer la tension traversant C142/C143 (C242/C243). Est-elle de ±20 V par rapport à la masse ?
Oui
Non
Mesurer la tension au niveau de P141-5 (P145-5). Est-elle <-0,6 V ?
Oui
Non
Contrôler la voie du signal
Contrôler le circuit de coupure du son construit autour de TR5/TR7
Mutisme des deux sorties
Soulever à tour de rôle P141 et P145 pour circonscrire le défaut à une sortie
Une sortie est en bon état de marche
Contrôler l'alimentation ±15 V. Pour ce faire, enlever P141 et P145 (P126 et P128). Appliquer une charge de 1 kohm, 1/2 W, à la masse des alimentations ±20 V, p. ex. entre P126-5 (P128-5) et la masse et entre P126-3 (P128-3) et la masse
Soulever R187 (R278) au niveau de la sortie défectueuse
Sortie en bon état
Persistance de l'erreur
Contrôler le circuit construit autour du module CTN
Voir si C142/C143 (C242/C243) sont court-circuités. L'anomalie est vraisemblablement imputable à un CI de sortie défectueux

ABL (linéarisation adaptative des graves)

Le raccordement d'un oscillateur à basse fréquence (80 Hz) à la prise AUDIO AUX LINK facilite le contrôle de cette fonction. Lors de l'essai, il convient de procéder aux réglages suivants:

Volume	80
Bass	0
Treble	0
Balance	0
Loudness	0

Attention !

Il convient de procéder à un nouveau réglage si le téléviseur a été coupé lors de la procédure et que cette configuration "son" n'a pas été mémorisée.

Appuyer sur AV RADIO pour appliquer le signal venant de la prise AUDIO AUX LINK.

Raccorder un voltmètre cc au travers de R137-PCB44 (R237-PCB45).

Régler le niveau de l'oscillateur à basse fréquence sur 70 mV env. et l'augmenter lentement jusqu'à mesurer en R137-PCB44 (R237-PCB45) une tension autre que 0 V. La tension doit être comprise entre 0 et 30 mV. La fonction ABL est alors active.

Le niveau à l'entrée gagne alors 10 dB.

La tension traversant R137-PCB44 (R237-PCB45) augmente instantanément pour atteindre 2,6 V env.

Le niveau de l'entrée est affaibli de 10 dB.

La tension traversant R137-PCB44 (R237-PCB45) doit tomber à 0 V env. au bout de 5 à 10 secondes. La fonction ABL n'est plus active.

INSULATION TEST

Each set *must* be insulation tested after it has been dismantled. The test is to be carried out when the set has been re-assembled and is ready for delivery to the customer.

The insulation test is carried out in the following way:

Short-circuit the two plug pins of the main plug and connect one of the terminals of the insulation tester. Connect the other terminal of the insulation tester to the chassis pin of the AUDIO AUX LINK sockets.

ISOLATIONSPRÜFUNG

Sämtliche geräte *sind* nach der Zerlegung *einer Isolationsprüfung zu unterziehen.* Diese Prüfung hat zu erfolgen, wenn das Gerät wieder vollständig zusammengebaut ist und an den Kunden ausgegeben werden kann.

Die Isolationsprüfung wird wie folgt durchgeführt:

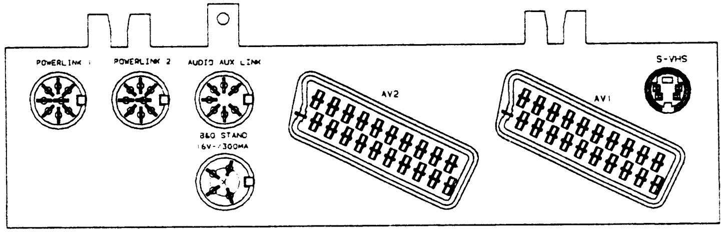
Die beiden Kontaktstifte des Netzsteckers werden kurzgeschlossen und daraufhin an eines der Terminale der Isolationstestgerätes angeschlossen.
Die andere Terminal wird an den Masseanschluß AUDIO AUX LINK der Steckdose angeschlossen.

ESSAI D'ISOLEMENT

Tous les appareils *doivent* subir un essai d'isolement après chaque démontage.
L'essai doit s'effectuer lorsque l'appareil est assemblé et prèt remis au client.

L'essai d'isolement s'effectue de la manière suivante:

Les deux broches, à la prise secteur, doivent être court-circuitées, puis connectées sur une des bornes de l'appareil d'essai d'isolement. L'autre borne de l'appareil d'essai d'isolement est couplée à la broche du potentiel de masse de la prise AUDIO AUX LINK.



NOTE!
To avoid damaging the set, it is essential that both insulator test terminals are in really good contact.

Now turn slowly the voltage control down on the insulation tester until a voltage of 1.5-2 kV is obtained. Hold it there for 1 sec, then turn slowly the voltage down again.

Flashovers are not permitted during the testing procedure.

WICHTIGER HINWEIS!
Zur Vermmeidung von Schäden am Gerät ist es wichtig, daß die beiden Terminale des Isolationstestgerätes einen wirklich einwandfreien Kontakt aufweisen.

Es wird jetzt langsam am Spannungsregler des Isolationstestgerätes gedreht, bis eine Spannung von 1,5 - 2 kV erreich wird. Diese Spannung ist 1 Sekunde lang zu halten, wonach der Spannungsregler wieder langsam zurückgedreht wird.

Es dürfen zu keinem Zeitpunkt während des Prüfvorgangs Überschläge vorkommen.

REMARQUE!
Pour éviter d'endommager l'appareil, il est imporant que les deux bornes de l'appareil d'essai d'isolement posseèdent un très bon contact.

Tourner lentement le règlage de la tension situé sur l'appareil d'essai d'isolement jusqu'à obtenir une tension de 1,5 - 2kV. Maintenir une seconde sur cette tension, puis diminuer de nouveau progressivement la tension.

Pendant la durée de l'assai, il ne faut, à aucun moment, qu'il se produise un amorçage.

Bang&Olufsen

Nicam system L interface for

Beovision AV 9000
Type 43XX

Beovision LX5000/6000
Type 336X/334X

Beovision MX4000/6000
Type 332X/330X

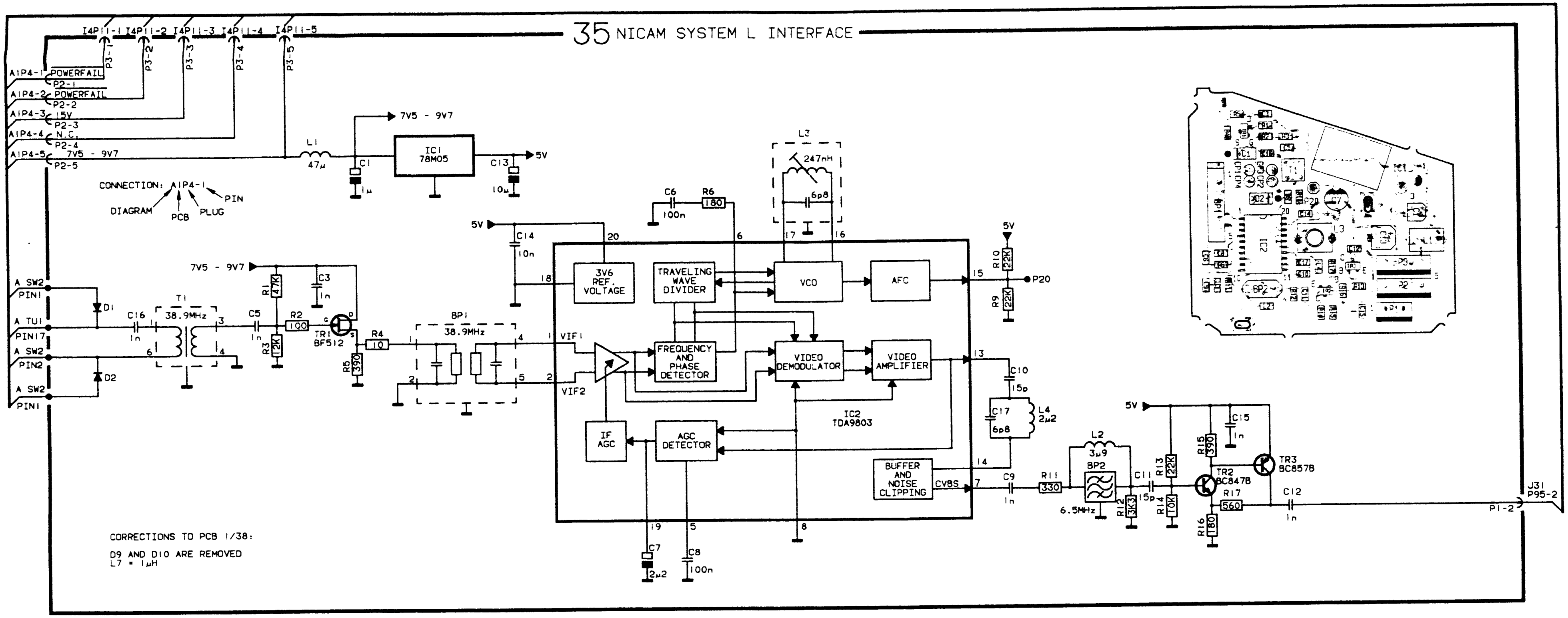
Beovision MX7000
Type 338X/3390

SERVICE MANUAL

Circuit Description

3540246 French (Nicam 728)

DIAGRAM Nicam L Interface


35 NICAM SYSTEM L INTERFACE
I4P11-1
I4P11-2
I4P11-3
I4P11-4
I4P11-5
P3-1
P3-2
P3-3
P3-4
P3-5
A1P4-1 POWERFAIL P2-1
A1P4-2 POWERFAIL P2-2
A1P4-3 15V P2-3
A1P4-4 N.C. P2-4
A1P4-5 7V5 - 9V7 P2-5
CONNECTION: A1P4-1
DIAGRAM
PCB
PLUG
PIN
L1 47µ
C1 1µ
7V5 - 9V7
IC1 78M05
C13 10µ
5V
C6 100n
R6 180
L3 247nH 6p8
5V
C14 10n
20
6
17
16
3V6 REF. VOLTAGE
TRAVELING WAVE DIVIDER
VCO
AFC
18
15
R10 22K
R9 22K
P20
A SW2 PIN1
A TU1 PIN17
A SW2 PIN2
A SW2 PIN1
D1
D2
C16 1n
T1 38.9MHz
7V5 - 9V7
R1 47K
C3 1n
C5 1n
R2 100
R3 12K
TR1 BF512
R4 10
R5 390
BP1 38.9MHz
VIF1
VIF2
FREQUENCY AND PHASE DETECTOR
VIDEO DEMODULATOR
VIDEO AMPLIFIER
13
C10 15p
C17 6p8
L4 2µ2
IC2 TDA9803
IF AGC
AGC DETECTOR
BUFFER AND NOISE CLIPPING
CVBS
14
7
C9 1n
R11 330
L2 3µ9
BP2 6.5MHz
R12 3K3
C11 15p
R13 22K
R14 10K
5V
R15 390
C15 1n
TR2 BC847B
TR3 BC857B
R17 560
R16 180
C12 1n
J31 P95-2
P1-2
19
5
8
C7 2µ2
C8 100n
CORRECTIONS TO PCB 1/38:
D9 AND D10 ARE REMOVED
L7 = 1µH

LIST OF ELECTRICAL PARTS

PCB 35, 8007958
Nicam L interface

IC1	8340212	78M05	IC2	8342611	TDA9803
TR1	8320611	BF512	TR3	8320811	BC857B
TR2	8320755	BC847B			
D1- D2	8300635	BA683			
C1	4201257	1µF 20% 50V	C10- C11	4000402	15pF 5% 50V
C3	4000424	1nF 5% 50V	C12	4000424	1nF 5% 50V
C5	4000424	1nF 5% 50V	C13	4201163	10µF 20% 35V
C6	4010274	100nF 25V	C14	4010271	10nF 10% 50V
C7	4200517	2.2µF 20% 50V	C15- C16	4000424	1nF 5% 50V
C8	4010274	100nF 25V	C17	4000463	6.8pF ±0.5pF
C9	4000424	1nF 5% 50V			

L1	8020916	Coil 47µH	L3	8021033	Coil 77.8MHz
L2	8021080	Coil 3.9µH 10%	L4	8021079	Coil 2.2µH 10%
BP1	8030247	Filter 0FW, G9251M	BP2	8030242	Ceramic filter 6.5MHz
T1	8010153	Trafo			
P1	7220710	Plug 3 pole	P2- P3	7220712	Plug 5 pole

Adjustment

- Connect an aerial signal to the product, and tune in to a station, (Finetune = 0).
- Connect a DC voltmeter at P20.
- Adjust by means of L3 until a measurement of 2.5V ±0.1V is obtained.

Réglage

- Raccorder l'appareil à un signal d'atenne et régler sur une station, (Finetune = 0).
- Raccorder un voltmètre cc à P20.
- A l'aide de L3, régler jusqu'à obtenir 2,5 V ±0,1 V.